PRELIMINARY

1. NJD002444958
2. Inmont Corporation (Subsidiary)
3. L-5 Factory Lane
   Bound Brook, NJ 08805
4. BHWM
5. Storage
6. $27,170
7. $29,615
8. $31,392
9. $32,648

1. NJD002165371
2. Inmont Corporation (Subsidiary)
3. 150 Wagaraw Road
   Hawthorne, NJ 07506
4. BHWM
5. Storage
6. $16,170
7. $17,625
8. $18,683
9. $19,430

NJD001288711
2. Inmont Corporation (Subsidiary)
3. 200 Gregg St
   Lodi, NJ 07644
4. BHWM
5. Storage
6. $7,480
7. $8,153
8. $8,642
9. $8,988

NORTH CAROLINA

1. NCD990686168
2. Inmont Corporation (Subsidiary)
3. 1300 Westinghouse Blvd.
   Charlotte, NC 28217
4. Department of Human Resources
5. Storage
6. $21,354
7. $23,276
8. $24,673
9. $25,660

1. NCD049997786
2. Inmont Corporation (Subsidiary)
3. Highway 70 West
   Morganton, NC 28655
4. DHR
5. Storage
6. $36,861
7. $40,178
8. $42,589

MISSISSIPPI

1. MSD004010724
2. American Bosch Electrical Products, Division of Ambac Industries, Inc. (Subsidiary)
3. P. O. Box 2228
   Columbus, MS 39701
4. Department of Natural Resources
5. Storage
6. $20,000 (revised)
7. $21,800

NEW JERSEY

1. NJD082988056
2. Inmont Corporation (Subsidiary)
3. James Street
   Belvidere, NJ 07823
4. Region II
5. Storage
6. $21,714
7. $23,668

1. NJD002444958
2. Inmont Corporation (Subsidiary)
3. L-5 Factory Lane
   Bound Brook, NJ 08805
4. Region II
5. Storage
6. $27,170
7. $29,615

1. NJD002165371
2. Inmont Corporation (Subsidiary)
3. 150 Wagaraw Road
   Hawthorne, NJ 07506
4. Region II
5. Storage
6. $16,170
7. $17,625

1. NJD001288711
2. Inmont Corporation (Subsidiary)
3. 200 Gregg Street
   Lodi, NJ 07644
4. Region II
5. Storage
6. $7,480
7. $8,153

PRELIMINARY

1. OHD000706606 (Ohio EPA Permit Number 00-60-0203)
2. Automotive Products Division/Duncan Ave. Facility, Division of Ysleex Group, Inc. (Subsidiary)
3. 2200 Linden Avenue
   Zanesville, OH 47305
4. Ohio EPA
5. Storage and treatment
6. $6,256
7. $6,819
8. $7,228
9. $7,517

1. OHD004236816 (Ohio EPA Permit Number 05-31-0101)
2. Inmont Corporation (Subsidiary)
3. 1720-1754 Dana Avenue
   Cincinnati, OH 45207
4. Ohio EPA
5. Storage
6. $34,986
7. $38,135
8. $40,423
9. $42,040

1. OHD004236873 (Ohio EPA Permit Number 05-31-0514)
2. Inmont Corporation (Subsidiary)
3. 4700 Paddock Road
   Cincinnati, OH 45229
4. Ohio EPA
5. Storage
6. $3,935
7. $4,289
8. $4,546
9. $4,728

1. OHDO76796887 (Ohio EPA Permit Number 05-19-0054)
2. Inmont Corporation (Subsidiary)
3. State Route 571 East
   Greenville, OH 45331
4. Ohio EPA
5. Storage
6. $31,840
7. $34,706
8. $36,788
9. $38,260

TEXAS

1. TXD047830443 (Texas TDWR Registration Number 30362)
2. Mostek Corporation (Subsidiary)
3. 1215 West Crosby Road
   Carrollton, TX 75006
4. Department of Water Resources
5. Storage and treatment
6. $100,000
7. $109,000
8. $115,540
9. $120,162

NEW YORK

1. NYD001317072
2. Carrier Air Conditioning Thompson Road Plant (Subsidiary)
3. P. O. Box 4808
   Syracuse, NY 13221
4. Region II
5. Storage
6. $30,000
7. $32,700

NORTH CAROLINA

1. NCD990686168
2. Inmont Corporation (Subsidiary)
3. 1300 Westinghouse Blvd.
   Charlotte, NC 28217
4. Department of Human Resources
5. Storage
6. $21,354
7. $23,276

1. NCD049997786
2. Inmont Corporation (Subsidiary)
3. Highway 70 West
   Morganton, NC 28655
4. DHR
5. Storage
6. $36,861
7. $40,178

OHIO

1. OHD002979136
2. Automotive Products Division/Linden Ave. Facility,
   Division of Essex Group, Inc. (Subsidiary)
3. 2200 Linden Avenue
   Zanesville, OH 47305
4. Region V
5. Treatment
6. $6,256
7. $6,819

1. OHD004236816
2. Inmont Corporation (Subsidiary)
3. 1720-1754 Dana Avenue
   Cincinnati, OH 45207
4. Region V
5. Storage
6. $34,986
7. $38,135

PRELIMINARY

-- POST-CLOSURE COSTS --

CONNECTICUT

1. CTD003935905
2. Pratt & Whitney Aircraft Group (Division)
3. Aircraft Road
   Middletown, CT 06457
4. DEP
5. Disposal (includes a landfill)
6. $572,000 revised October 1984 in third quarter 1980 dollars
7. $623,480 " " " " " " "
8. $660,889 " " " " " " "
9. $687,324 " " " " " " "

(Also, see page 3 for closure cost at this site)

TOTAL: UNITED TECHNOLOGIES CORPORATION

SUB-TOTAL Closure Costs:

1.	Number of Facilities:	= 38
8.	Sub-Total 19 May 1984 Closure Costs*:	= $4,927,587

SUB-TOTAL Post Closure Costs:

1.	Number of Facilities:	= (1)
8.	Sub-Total 19 May 1984 Post-Closure Cost:	= $ 687,324

TOTAL Closure and Post-Closure Costs:

1.	Number of Facilities:	= 38
8.	TOTAL 19 May 1984 COSTS:	= $5,614,911

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1. OHD087433744
2. Inmont Corporation (Subsidiary)
3. 4700 Paddock Road
   Cincinnati, OH 45229
4. Region V
5. Storage
6. $3,935
7. $4,289

1. OHD076796887
2. Inmont Corporation (Subsidiary)
3. State Route 571 East
   Greenville, OH 45331
4. Region V
5. Storage
6. $31,840
7. $34,706

PENNSYLVANIA

1. PAD002313419
2. Teledynamics Electronics Systems, Division of
   Ambac Industries, Inc. (Subsidiary)
3. 525 Virginia Drive
   Ft. Washington, PA 19034
4. Department of Environmental Resources
5. Storage
6. $4,000
7. $4,360

TEXAS

1. TXD047830443
2. Mostek Corporation (Subsidiary)
3. 1215 West Crosby Road
   Carrollton, TX 75006
4. Department of Water Resources
5. Storage and treatment
6. $100,000
7. $109,000

PRELIMINARY

Price Waterhouse

ONE FINANCIAL PLAZA
HARTFORD, CONNECTICUT 06103
203 525-4600

October 19, 1984

To the Board of Directors of
United Technologies Corporation

We have examined the consolidated financial statements of United Technologies Corporation and subsidiaries (the "Corporation") as of December 31, 1983 and for the year then ended and have issued our report thereon dated January 25, 1984. We have not examined any financial statements of the Corporation as of any date or for any period subsequent to December 31, 1983.

Reference is made to the letter dated October 18, 1984 to the Connecticut Department of Environmental Protection from Mr. Stillman B. Brown, Executive Vice President - Finance and Administration and Chief Financial Officer of United Technologies Corporation (the "Letter"). We have compared the amounts listed below and included in the Letter to the corresponding amounts included in the aforementioned consolidated financial statements and found such amounts to be in agreement.

Description	Amount (000's)
Tangible net worth at December 31, 1983	$ 3,212,502 (1)
Total assets in U.S. at December 31, 1983	6,340,520 (2)

(1) Shareowners' Equity, $3,783,755; less Deferred Charges, $571,253.

(2) United States operations, $6,163,414; plus General corporate assets and other, $177,106.

Because the foregoing procedure does not constitute an examination made in accordance with generally accepted auditing standards, we do not express an opinion on the amounts listed above. In connection with this procedure, no matters came to our attention that caused us to believe that the amounts should be adjusted.

--- POST-CLOSURE COST ---

CONNECTICUT

1. CTD003935905
2. Pratt & Whitney Aircraft Group (Division)
3. Aircraft Road
   Middletown, CT 06457
4. DEP
5. Disposal (includes a landfill)
6. $500,000
7. $545,000

(Also, see page 3 for closure cost at this site)

TOTAL: UNITED TECHNOLOGIES CORPORATION

SUB-TOTAL Closure Costs:	
1. Number of Facilities:	= 43
7. Sub-Total 19 May 1982 Closure Costs*:	= $3,988,434
SUB-TOTAL Post-Closure Costs:	
1. Number of Facilities:	= (1)
7. Sub-Total 19 May 1982 Post-Closure Cost:	= $ 545,000
TOTAL Closure and Post-Closure Costs:	
1. Number of Facilities:	= 43
7. TOTAL 19 May 1982 COSTS:	= $4,533,434

*Unless recently revised using 1983 dollars

PRELIMINARY

We performed no audit or other procedures with respect to the amount shown in the Letter for current closure and post-closure cost estimates. Accordingly, we do not express an opinion or any other form of assurance on such amount.

It is understood that this report is solely for your information and assistance in complying with the requirements of the Environmental Protection Agency - Subpart H of 40 CFR, Parts 264 and 265 and the regulations of authorized states, and should not be used for any other purpose.

Yours very truly,

Price Waterhouse

Price Waterhouse

ONE FINANCIAL PLAZA
HARTFORD, CT 06103
203 525-5671

March 14, 1983

To the Board of Directors
United Technologies Corporation

We have examined the consolidated financial statements of United Technologies Corporation and subsidiaries (the "Corporation") as of December 31, 1982 and for the year then ended and have issued our report thereon dated January 26, 1983. We have not examined any financial statements of the Corporation as of any date or for any period subsequent to December 31, 1982.

Reference is made to the letters dated March 11, 1983 to various states and three Regional Administrators from Mr. Stillman B. Brown, Executive Vice President - Finance and Administration and Chief Financial Officer of United Technologies Corporation (the "Letters"). We have compared the amounts listed below and included in the Letters to the corresponding amounts included in the aforementioned consolidated financial statements and found such amounts to be in agreement:

Description	Amount (000's)
Tangible net worth at December 31, 1982	$ 2,929,147 (1)
Total assets in U.S. at December 31, 1982	5,789,502 (2)

(1) Shareowners' Equity, $3,481,790 less Deferred Charges, $552,643.

(2) United States operations, $5,641,215 plus General corporate assets and other, $148,287.

Because the foregoing procedure does not constitute an examination made in accordance with generally accepted auditing standards, we do not express an opinion on the amounts listed above. In connection with this procedure, no matters came to our attention that caused us to believe that the amounts should be adjusted.

CTD 990672081
RCRA Part B Permit Application
United Technologies
Pratt & Whitney Aircraft
CTD 990672081

PRELIMINARY

LIBERTY MUTUAL

This is to Certify that

UNITED TECHNOLOGIES CORPORATION, ETAL
C/O R.G. Hugel, Assistant Treasurer
United Technologies Building
Hartford, Connecticut 06101

Name and address of Insured.

4/20/83

is, at the date of this certificate, insured by the Company under the policy(ies) listed below. The insurance afforded by the listed policy(ies) is subject to all their terms, exclusions and conditions and is not altered by any requirement, term or condition of any contract or other document with respect to which this certificate may be issued.

TYPE OF POLICY	EXPIRATION DATE	POLICY NUMBER	LIMITS OF LIABILITY	
WORKERS' COMPENSATION			COVERAGE AFFORDED UNDER W.C. LAW OF FOLLOWING STATES	LIMIT OF LIABILITY-COV B (Indicate Limit for each state)
			MARITIME COVERAGE FOLLOWING STATES	LIMIT OF LIABILITY MARITIME COVERAG
[X] COMPREHENSIVE FORM [ ] SCHEDULE FORM [ ] PRODUCTS COMPLETED OPERATIONS HAZARDOUS WASTE-PER ATTACHED ENDORSEMENT [ ] INDEPENDENT CONTRACTORS/CONTRACTORS PROTECTIVE [ ] CONTRACTUAL LIABILITY [ ]	CONTINUOUS	RG1-612-004136-24	BODILY INJURY $ EACH OCCURRENCE $ AGGREGATE COMBINED SINGLE LIMIT BODILY INJURY AND PROPERTY DAMAGE $1,000,000 EACH OCCURRENCE $2,000,000 AGGREGATE	PROPERTY DAMAGE $ EACH OCCURRENC $ AGGREGAT
[ ] OWNED [ ] NON-OWNED [ ] HIRED			$ EACH PERSON $ EACH ACCIDENT OR OCCURRENCE $ EACH ACCIDENT SINGLE LIMIT B I AND P.D COMBIN	$ EACH ACCIDEN OR OCCURREN

CATIONS OF OPERATIONS & JOB # (If Applicable)

DESCRIPTION OF OPERATIONS:

SEE EXHIBIT A

NOTICE OF CANCELLATION: (NOT APPLICABLE UNLESS A NUMBER OF DAYS IS ENTERED BELOW). BEFORE THE STATED EXPIRATION DATE THE COMPANY WILL CANCEL OR REDUCE THE INSURANCE AFFORDED UNDER THE ABOVE POLICIES AT LEAST 60 DAYS NOTICE OF SUCH CANCELLATION OR REDUCTION HAS BEEN MAILED.

CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION
Hazardous Waste Management Section
165 Capitol Avenue
Hartford, Connecticut 06106

Marie Stewart
AUTHORIZED REPRESENTATIVE

September 16, 1982 Glastonbury, CT
DATE ISSUED OFFICE

We performed no audit or other procedures with respect to the amount shown in the Letters for closure and post-closure cost estimates. Accordingly, we do not express an opinion or any other form of assurance on such amount.

It is understood that this report is solely for your information and assistance in complying with the requirements of the Environmental Protection Agency - Subpart H of 40 CFR, Parts 264 and 265, and should not be used for any other purpose.

Yours very truly,

Price Waterhouse

PRELIMINARY

HAZARDOUS WASTE FACILITY LIABILITY ENDORSEMENT

1. This endorsement certifies that the policy to which the endorsement is attached provides liability insurance covering bodily injury and property damage in connection with the insured's obligation to demonstrate financial responsibility under 40 CFR 264.147 or 265.147.
The coverage applies at:

Name and Address of Each Facility	EPA Identification Number
Pratt & Whitney Aircraft Group Colt Street, East Hartford, CT 06108	CTD000844399
Pratt & Whitney Aircraft Group 400 Main Street, East Hartford, CT 06108	CTD990672081
Pratt & Whitney Aircraft Group Pent Road (Willgoos), East Hartford, CT 06108	CTD000845131
Pratt & Whitney Aircraft Group Pine Street, Manchester, CT 06040	CTD000844324
Pratt & Whitney Aircraft Group Aircraft Road, Middletown, CT 06457	CTD003935905
Pratt & Whitney Aircraft Group 415 Washington Ave., North Haven, CT 06473	CTD001449511
Pratt & Whitney Aircraft Group Dividend Road, Rocky Hill, CT 06067	CTD000844407
Pratt & Whitney Aircraft Group Aircraft Road, Southington, CT 06489	CTD001149277
Pratt & Whitney Aircraft Group Newell St., (Service Center), Southington, CT 06489	CTD000844332
Power Systems Division/Fuel Cell Operations P.O. Box 109, South Windsor, CT 06074	CTD010166791
Hamilton Standard Complex B-1, 2 and 3 Hamilton Road, Windsor Locks, CT 06096	CTD001145341
Norden Systems Norden Place, Norwalk, CT 06856	CTD089623318
Sikorsky Aircraft South Avenue, Bridgeport, CT 06604	CTD001449735
Sikorsky Aircraft North Main St., Stratford, CT 06602	CTD001449784
United Technologies Research Center Silver Lane, East Hartford, CT 06108	CTD095532131

for sudden accidental occurrences.

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES LISTED BELOW.

RCRA Part B Permit Application
United Technologies
Pratt & Whitney Aircraft
CTD 990672081

LIBERTY MUTUAL

This is to Certify that

UNITED TECHNOLOGIES CORPORATION, ETAL
C/O R.G. Hugel, Assistant Treasurer
United Technologies Building
Hartford, Connecticut 06101

Name and address of Insured.

4/20/83

is, at the date of this certificate, insured by the Company under the policy(ies) listed below. The insurance afforded by the listed policy(ies) is subject to all their terms, exclusions and conditions and is not altered by any requirement, term or condition of any contract or other document with respect to which this certificate may be issued.

TYPE OF POLICY	EXPIRATION DATE	POLICY NUMBER	LIMITS OF LIABILITY	
WORKERS' COMPENSATION			COVERAGE AFFORDED UNDER W.C. LAW OF FOLLOWING STATES	LIMIT OF LIABILITY-COV B (Indicate Limit for each state)
			MARITIME COVERAGE-FOLLOWING STATES	LIMIT OF LIABILITY MARITIME COVERAG
GENERAL LIABILITY: ☒ COMPREHENSIVE FORM ☐ SCHEDULE FORM; ☐ PRODUCTS COMPLETED OPERATIONS; ☒ HAZARDOUS WASTE-PER ATTACHED ENDORSEMENT; ☐ INDEPENDENT CONTRACTORS / CONTRACTORS PROTECTIVE; ☐ CONTRACTUAL LIABILITY; ☐	CONTINUOUS	RG1-612-004136-24	BODILY INJURY: $ EACH OCCURRENCE; $ AGGREGATE	PROPERTY DAMAGE: $ EACH OCCURRENC; $ AGGREGAT
			COMBINED SINGLE LIMIT BODILY INJURY AND PROPERTY DAMAGE: $1,000,000 EACH OCCURRENCE; $2,000,000 AGGREGATE	
AUTO LIABILITY: ☐ OWNED ☐ NON-OWNED ☐ HIRED			$ EACH PERSON; $ EACH ACCIDENT OR OCCURRENCE	$ EACH ACCIDEN OR OCCURREN
			$ EACH ACCIDENT-SINGLE LIMIT-B I AND P.D COMBINE	
OTHER				

LOCATIONS OF OPERATIONS & JOB # (If Applicable) — DESCRIPTION OF OPERATIONS:

SEE EXHIBIT A

NOTICE OF CANCELLATION: (NOT APPLICABLE UNLESS A NUMBER OF DAYS IS ENTERED BELOW). BEFORE THE STATED EXPIRATION DATE THE COMPANY WILL NOT CANCEL OR REDUCE THE INSURANCE AFFORDED UNDER THE ABOVE POLICIES UNLESS AT LEAST 60 DAYS NOTICE OF SUCH CANCELLATION OR REDUCTION HAS BEEN MAILED TO

CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION
Hazardous Waste Management Section
165 Capitol Avenue
Hartford, Connecticut 06106

Marie Stanley
AUTHORIZED REPRESENTATIVE

September 16, 1982 Glastonbury, CT
DATE ISSUED OFFICE

PRELIMINARY

The limits of liability are: $1,000,000 each occurrence

$2,000,000 annual aggregate

exclusive of legal defense costs.

2. The insurance afforded with respect to such occurrences is subject to all of the terms and conditions of the policy; provided, however, that any provisions of the policy inconsistent with subsections (a) through (e) of this Paragraph 2 are hereby amended to conform with subsections (a) through (e):

(a) Bankruptcy or insolvency of the insured shall not relieve the Insurer of its obligations under the policy to which this endorsement is attached.

(b) The Insurer is liable for the payment of amounts within any deductible applicable to the policy with a right of reimbursement by the insured for any such payment made by the Insurer. This provision does not apply with respect to that amount of any deductible for which coverage is demonstrated as specified in 40 CFR 264.147(f) or 265.147(f).

(c) Whenever requested by the Commissioner of the Connecticut Department of Environmental Protection (DEP), the Insurer agrees to furnish to the Commissioner a signed duplicate of the policy and all endorsements.

(d) Cancellation of this endorsement, whether by the Insurer or the insured, will be effective only upon written notice and only after the expiration of sixty (60) days after a copy of such written notice is received by the Commissioner of the Connecticut Department of Environmental Protection (DEP) in which the facility(ies) is (are) located.

(e) Any other termination of this endorsement will be effective only upon written notice and only after the expiration of thirty (30) days after a copy of such written notice is received by the Commissioner of the Connecticut Department of Environmental Protection (DEP) in which the facility(ies) is (are) located.

Attached to and forming part of policy No. RG1-612-004136-24 issued by Liberty Mutual Insurance Company, herein called the Insurer, of 175 Berkeley Street, Boston, Massachusetts 02117 to United Technologies Corporation of One Financial Plaza, Hartford, Connecticut 06101 this 1st day of April, 1982. The effective date of said policy is the 1st day of October, 1981.

HAZARDOUS WASTE FACILITY LIABILITY ENDORSEMENT

1. This endorsement certifies that the policy to which the endorsement is attached provides liability insurance covering bodily injury and property damage in connection with the insured's obligation to demonstrate financial responsibility under 40 CFR 264.147 or 265.147. The coverage applies at:

Name and Address of Each Facility	EPA Identification Number
Pratt & Whitney Aircraft Group Colt Street, East Hartford, CT 06108	CTD000844399
Pratt & Whitney Aircraft Group 400 Main Street, East Hartford, CT 06108	CTD990672081
Pratt & Whitney Aircraft Group Pent Road (Willgoos), East Hartford, CT 06108	CTD000845131
Pratt & Whitney Aircraft Group Elm Street, Manchester, CT 06040	CTD000844324
Pratt & Whitney Aircraft Group Aircraft Road, Middletown, CT 06457	CTD003935905
Pratt & Whitney Aircraft Group 415 Washington Ave., North Haven, CT 06473	CTD001449511
Pratt & Whitney Aircraft Group Dividend Road, Rocky Hill, CT 06067	CTD000844407
Pratt & Whitney Aircraft Group Aircraft Road, Southington, CT	CTD001149277
Pratt & Whitney Aircraft Group Newell St., (Service Center), Southington, CT 06489	CTD000844332
Power Systems Division/Fuel Cell Operations Governor's Highway, South Windsor, CT 06074	CTD010166791
Hamilton Standard Complex B-1, 2 and 3 Hamilton Road, Windsor Locks, CT 06096	CTD001145341
Norden Systems Norden Place, Norwalk, CT 06856	CTD089623318
Sikorsky Aircraft South Avenue, Bridgeport, CT 06604	CTD001449735
Sikorsky Aircraft North Main St., Stratford, CT 06602	CTD001449784
United Technologies Research Center Silver Lane, East Hartford, CT 06108	CTD095532131

for sudden accidental occurrences.

GL 04 20
(Ed. 07 82)

This endorsement forms a part of the policy to which attached effective on the inception date of the policy unless otherwise stated herein

(The following information is required only when this endorsement is issued subsequent to preparation of policy.)

Endorsement effective Policy No Endorsement No 4/20/83

Named Insured

Additional Premium $ _____ Countersigned by _____
(Authorized Representative)

This endorsement modifies such insurance as is afforded by the provisions of the policy relating to the following:

COMPREHENSIVE GENERAL LIABILITY INSURANCE
MANUFACTURERS AND CONTRACTORS LIABILITY INSURANCE
OWNERS, LANDLORDS AND TENANTS LIABILITY INSURANCE
SMP LIABILITY INSURANCE

HAZARDOUS WASTE FACILITIES -- AMENDATORY PROVISIONS

It is agreed that the following additional provisions apply with respect to a Hazardous Waste Treatment, Storage, or Disposal Facility subject to the financial responsibility requirements of 40 CFR Part 264.147 or 265.147 (Environmental Protection Agency Regulations); provided that the name, address or location, and EPA Identification Number of such facility are shown in the Schedule below.

1. The following provisions apply, in place of the limits of liability provisions shown elsewhere in this policy, to the company's liability for damages because of bodily injury or property damage arising out of a sudden and accidental discharge, dispersal, release or escape of irritants, contaminants or pollutants from any facility shown in the Schedule of this endorsement.

   Regardless of the number of: (1) facilities shown in the Schedule of this endorsement; (2) insureds under this policy; (3) persons or organization which sustain bodily injury or property damage; or (4) claims made or suits brought:

   (a) the total liability of the company for all damages because of all bodily injury and all property damage shall not exceed the limit of liability shown in the Schedule of this endorsement as "aggregate;"

   (b) subject to (a), the total liability of the company for all damages because of all bodily injury and all property damage arising out of a single occurrence shall not exceed the limit of liability shown in the Schedule of this endorsement as "each occurrence."

PRELIMINARY

I hereby certify that the wording of this endorsement is identical to the wording specified in 40 CFR 264.151(i) as such regulation was constituted on the date first above written, and that the Insurer is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in one or more States.

Joseph E. Anthony
Assistant Vice President, Authorized Representative of

Liberty Mutual Insurance Company
20 Western Boulevard, Glastonbury, Connecticut 06033

The limits of liability are: $1,000,000 each occurrence

$2,000,000 annual aggregate

exclusive of legal defense costs.

2. The insurance afforded with respect to such occurrences is subject to all of the terms and conditions of the policy; provided, however, that any provisions of the policy inconsistent with subsections (a) through (e) of this Paragraph 2 are hereby amended to conform with subsections (a) through (e):

   (a) Bankruptcy or insolvency of the insured shall not relieve the Insurer of its obligations under the policy to which this endorsement is attached.

   (b) The Insurer is liable for the payment of amounts within any deductibles applicable to the policy with a right of reimbursement by the insured for any such payment made by the Insurer. This provision does not apply with respect to that amount of any deductible for which coverage is demonstrated as specified in 40 CFR 264.147(f) or 265.147(f).

   (c) Whenever requested by a Regional Administrator of the U.S. Environmental Protection Agency (EPA), the Insurer agrees to furnish to the Regional Administrator a signed duplicate of the policy and all endorsements.

   (d) Cancellation of this endorsement, whether by the Insurer or the insured, will be effective only upon written notice and only after the expiration of sixty (60) days after a copy of such written notice is received by the Regional Administrator(s) of the EPA Region(s) in which the facility(ies) is (are) located.

   (e) Any other termination of this endorsement will be effective only upon written notice and only after the expiration of thirty (30) days after a copy of such written notice is received by the Regional Administrator(s) of the EPA Region(s) in which the facility(ies) is (are) located.

Attached to and forming part of policy No. RG1-612-004136-24 issued by Liberty Mutual Insurance Company, herein called the Insurer, of 175 Berkeley Street, Boston, Massachusetts 02117 to United Technologies Corporation of One Financial Plaza, Hartford, Connecticut 06101 this 1st day of April, 1982. The effective date of said policy is the 1st day of October, 1981.

For the purpose of determining the limit of the company's liability, all bodily injury and property damage arising out of a sudden and accidental discharge, dispersal, release or escape of irritants, contaminants or pollutants, including all bodily injury and property damage arising out of all subsequent exposure of persons and property to such substances, shall be considered as arising out of a single occurrence.

2. The company shall pay any applicable deductible amount and, upon notification of such payment, the named insured shall promptly reimburse the company for the amount so paid. This provision does not apply with respect to that amount of any deductible for which financial responsibility is demonstrated as specified in 40 CFR 264.147 (f) or 265.147 (f).

3. Neither the company nor the insured may terminate the insurance provided herein for any facility except by providing written notice to the other party and the Regional Administrator(s) of the EPA Region(s) in which such facility(ies) is (are) located. Termination by cancellation shall be effective no fewer than sixty (60) days after such written notice is received by the Regional Administrator; other termination shall be effective no fewer than thirty (30) days after receipt of such notice.

SCHEDULE

Name of Facility	Address or Location	EPA Identification Number
See attached schedule EXHIBIT A		

Limits of Liability

$ 2,000,000 aggregate
$ 1,000,000 each occurrence

Additional Premium $_____.

PRELIMINARY

HAZARDOUS WASTE FACILITY CERTIFICATE
OF POLLUTION LIABILITY INSURANCE

1. Liberty Mutual Insurance Company, the "Insurer", of 175 Berkeley Street, Boston, Massachusetts 02117, hereby certifies that it has issued pollution liability insurance covering bodily injury and property damage to:

UNITED TECHNOLOGIES CORPORATION, the "Insured", of

ONE FINANCIAL PLAZA, HARTFORD, CONNECTICUT 06101

in connection with the insured's obligation to demonstrate financial responsibility under 40 CFR 264.147 or 265.147. The coverage applies at:

Name and Address of Each Facility	EPA Identification Number
Pratt & Whitney Aircraft Group Colt St., East Hartford, CT 06108	CTD 0008[illegible]1399
Pratt & Whitney Aircraft Group Aircraft Road, Middletown, CT 06457	CTD 003935905
Pratt & Whitney Aircraft Group 415 Washington Ave., North Haven, CT 06473	CTD 001449511
Pratt & Whitney Aircraft Group Aircraft Road, Southington, CT 06489	CTD 001149277
Pratt & Whitney Aircraft Group Newell St. (Service Center), Southington, CT 06489	CTD 000844332
Hamilton Standard Complex B-1, 2 & 3 Hamilton Road, Windsor Locks, CT 06096	CTD 001145341
Sikorsky Aircraft North Main Street, Stratford, CT 06602	CTD 001449784

for nonsudden accidental occurrences.

The limits of liability are: $ 6,000,000 annual aggregate

$ 3,000,000 each occurrence

exclusive of legal defense costs.

The coverage is provided under policy number RG1-612-004136-24.

issued on (date) December 30, 1982.

The effective date of said policy is January 15, 1983.

The effective date of said pollution coverage is April 1, 1982.

I hereby certify that the wording of this endorsement is identical to the working specified in 40 CFR 264.151(i) as such regulation was constituted on the date first above written, and that the Insurer is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in one or more States.

Joseph E. Anthony
Assistant Vice President / Authorized Representative of

Liberty Mutual Insurance Company
20 Western Boulevard, Glastonbury, Connecticut 06033

2. The Insurer further certifies the following with respect to the insurance described in Paragraph 1:

(a) Bankruptcy or insolvency of the insured shall not relieve the Insurer of its obligations under the policy.

(b) The Insurer is liable for the payment of amounts within any deductible applicable to the policy, with a right of reimbursement by the insured for any such payment made by the Insurer. This provision does not apply with respect to that amount of any deductible for which coverage is demonstrated as specified in 40 CFR 264.147(f) or 265.147(f).

(c) Whenever requested by the Commissioner of the Connecticut Department of Environmental Protection (DEP), the Insurer agrees to furnish to the Commissioner a signed duplicate original of the policy and all endorsements.

(d) Cancellation of the insurance, whether by the insurer or the insured, will be effective only upon written notice and only after the expiration of sixty (60) days after a copy of such written notice is received by the Commissioner of the Connecticut Department of Environmental Protection (DEP) in which the facility(ies) is (are) located.

(e) Any other termination of the insurance will be effective only upon written notice and only after the expiration of thirty (30) days after a copy of such written notice is received by the Commissioner of the Connecticut Department of Environmental Protection (DEP) in which the Facility(ies), is (are) located.

I hereby certify that the wording of this instrument is identical to the wording specified in 40 CFR 264.151(J) as such regulation was constituted on the date first above written, and that the Insurer is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in one or more States.

Joseph E. Anthony
Assistant Vice President, Authorized Representative of

Liberty Mutual Insurance Company
20 Western Boulevard
Glastonbury, Connecticut 06033

PART II

SECTION - M - STORAGE OF CONTAINERS

I Description

A) Container Storage Building

1) The building for container storage is 60' x 60', has a solid concrete floor, three walls and a roof. The floor of the building is divided into five compartments, each with a sloping floor to the center of the compartment where a 2' x 2' x 2.5' containment pit is installed under the floor.

2) Containers are either Specification 17E or 17H 55 gallon new or used steel drums. All drums meet DOT Specifications for the wastes that they contain. They are each fitted with a locking ring and sealing gasket that are employed when the container is filled. The containers are moved on pallets with a fork lift, the prongs of the fork lift fitting into the pallet. All containers are strapped and stored on pallets, and stored no more than three high. Only one type of waste is placed into each container. Once they are sealed they generally remain that way for disposal. The barrels are routinely inspected for leaks and proper stacking according to Inspection Guide M-566 described on page 28 of this document.

3) Each compartment is sloped to the center of the compartment to drain liquids to the center and into a containment pit under the floor. Barrels are elevated from the floor by storing on pallets.

SECTION - M - STORAGE OF CONTAINERS

I Description

A) Container Storage Building

1) The building for container storage is 60' x 60', has a solid concrete floor, three walls and a roof. The floor of the building is divided into five compartments, each with a sloping floor to the center of the compartment where a 2' x 2' x 2.5' containment pit is installed under the floor. All containers are strapped and stored on pallets, and stacked no more than three high.

2) Each compartment is sloped to the center of the compartment to drain liquids to the center and into a containment pit under the floor. Barrels are elevated from the floor by storing on pallets.

3) The sloped areas and submerged containment pits have a capacity of 1900 gallons. The storage building does not store more than 350 barrels of liquid since primary liquid storage is bulk tanks.

4) Run-on cannot enter the container storage building. The floor elevation is at least three feet above ground level, and a full roof covers the building.

5) Accumulated liquids in the containment areas are manually pumped into an appropriate bulk storage tank for treatment.

Storage of Containers (Cont'd)

4) The sloped areas and submerged containment pits have a capacity of 1900 gallons. The storage building does not store more than 350 barrels of liquid since primary liquid storage is bulk tanks. The only liquids to be stored are paints and waxes and chemical products. Each of these is in a separate containments area is shown on Figure M-1 on the following page. The area with the wax/chlorinated solvents has a containment volume of 125 ft^3 or 935 gallons (See Section IV, Containment Calculations). Applying a 10% containment volume for liquid waste, this area can accommodate 170 barrels of wax/chlorinated solvent waste. Both the area with the paints and the area with the Chemical Products have containment volumes of 32 ft^3 allowing for storage of 43 barrels of each of these types of pure liquid wastes in each of these areas. Since the paint waste average approximately 60% liquid and 40% solid, up to 72 barrels of paint waste can be accommodated. Anything in excess of this amount can be stored with the waste wax/chorinated solvents. The remaining containment areas can accommodate 43 barrels each pure liquid wastes that are compatible with the wastes stored in those areas.

5) Run-on cannot enter the container storage building. The floor elevation is at least three feet above ground level, and a full roof covers the building.

Storage of Containers (Cont'd)

4) The sloped areas and submerged containment pits have a capacity of 1900 gallons. The storage building does not store more than 350 barrels of liquid since primary liquid storage is bulk tanks. The only liquids to be stored are paints and waxes and chemical products. Each of these is in a separate containments area is shown on Figure M-1 on the following page. The area with the wax/chlorinated solvents has a containment volume of 125 ft^3 or 935 gallons (See Section IV, Containment Calculations). Applying a 10% containment volume for liquid waste, this area can accommodate 170 barrels of wax/chlorinated solvent waste. Both the area with the paints and the area with the Chemical Products have containment volumes of 32 ft^3 allowing for storage of 43 barrels of each of these types of pure liquid wastes in each of these areas. Since the paint waste average approximately 60% liquid and 40% solid, up to 72 barrels of paint waste can be accommodated. Anything in excess of this amount can be stored with the waste wax/chorinated solvents. The remaining containment areas can accommodate 43 barrels each pure liquid wastes that are compatible with the wastes stored in those areas.

5) Run-on cannot enter the container storage building. The floor elevation is at least three feet above ground level, and a full roof covers the building.

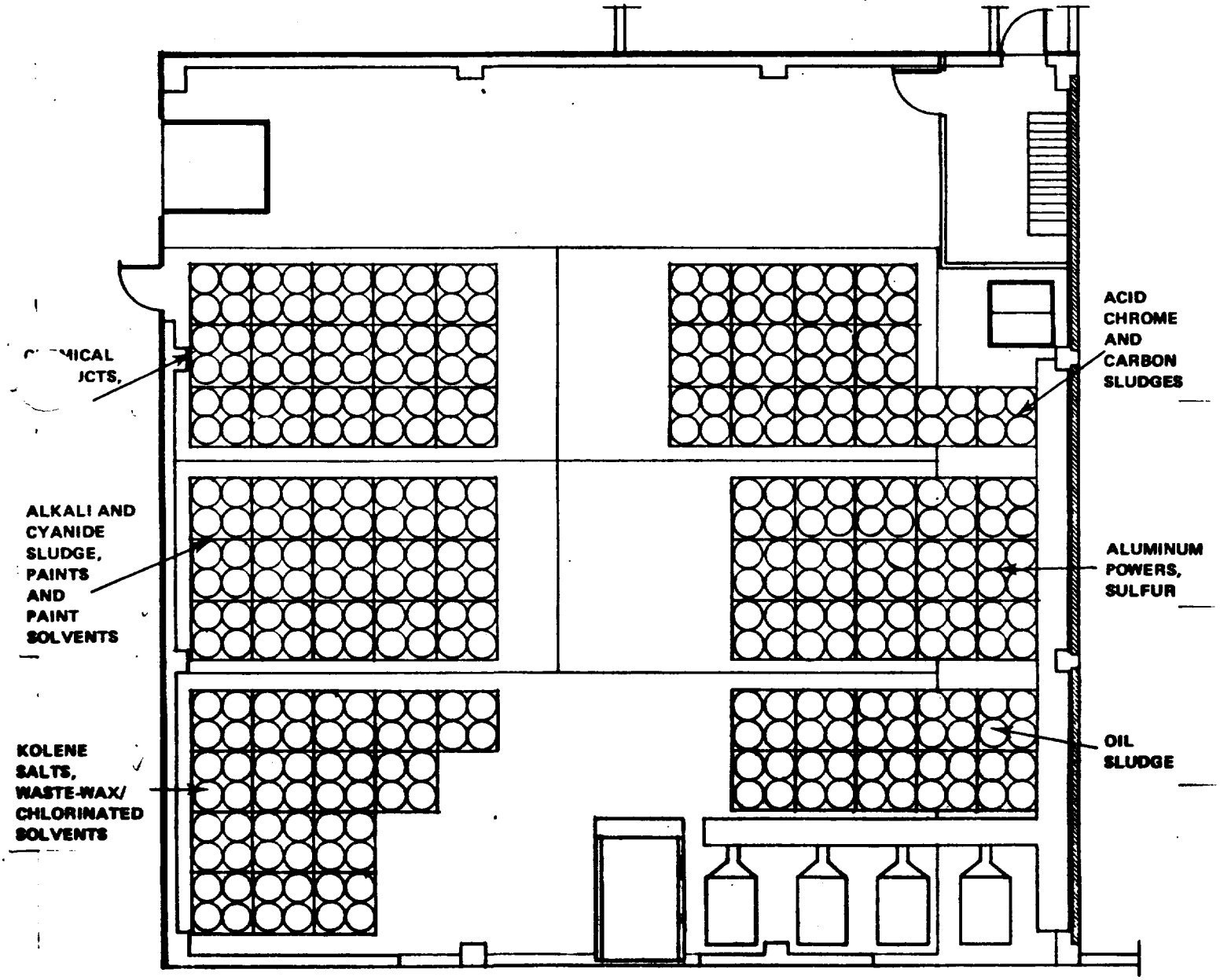
6) Accumulated liquids in the containment areas are manually pumped into an appropriate bulk storage tank for treatment.

7) A sample computer report, that is used to ensure that the 1000 drum maximum and the 350 drum maximum free-liquid drums is not exceeded, is included as Exhibit DD.

FIGURE M-1

BARREL STORAGE BUILDING

Arrangement of Pallets for Storage of 1000 barrels, four to a pallet, 3 pallets high



Storage of Containers (Cont'd)

6) Accumulated liquids in the containment areas will be analyzed for the specific waste types present in the containment area. Liquids will then be manually pumped to the appropriate bulk storage tank for treatment.

7) A sample page from a computer report is included as Exhibit DD. This report will be used in conjuncton with the general inspection schedule to ensure that the 1000 drum maximum and the 350 drum maximum free-liquids is not exceeded. The total number of drums in storage will be determined weekly as specified in the inspection schedule. If the total number of barrels is found to be over 500, the computer report will be consulted to determine the total number of liquids barrels in storage. In the unlikely event that this number is approaching 350, off-site shipments of liquid drums will immediately be scheduled to reduce this number.

8) The aisle space in the container storage building is adequate for the hazardous wastes being stored there. The aisle spaces mark the seperation between each containment area and are sufficiently wide enough to allow unobstructed movement of personnel with fire or spill control equipment. For additional fire control, the open front of this building will allow quick overhead fire control practices. Any or all sections inside the building can easily be covered with foam or water from P&W fire department vehicles.

Storage of Containers (Cont'd)

As previously mentioned, the total amount of liquids stored will be much less than the total amount of solids in storage. The seperate containment areas prevent the mixing of the different liquids which may possibly be spilled. These facts indicate that any spills will probably be small in nature and confined to the seperate containment areas where personnel can completely control the spill using the appropriate aisle space.

Figure M1 represents the maximum barrel storage, not the typical condition. Generally there will be less than 500 barrels in storage, allowing even better access and movement within each containment area.

Storage of Containers (Cont'd)

B) Transporter Storage Pad

1) The building used for storage of waste transporters is 58' x 16', has a solid concrete floor and a roof. The floor is divided into three compartments each with a sloping floor to the rear of the compartment, and the side of each compartment and the back of the pad are curbed. Acid, alkali and cyanide wastes may be stored in these compartments. No compartment will contain two incompatable wastes as described in the General Contingency Plan. The total number of transporters that can be fitted on the pad is 24. Placement of the trasnporters on the storage pad is illustrated in Figure M-2.

2) The totally enclosed 375 gallon transporters are rectangular, 36" X 42" X 60" and are constructed of 1/4" - 3/8" boiler plate. The transporter conform to DOT Specification through DOT Exemption Notice E-7598. Waste enters the top of the transporter through a 2" valve and leaves through the bottom of the transporter through a 2" Teflon lined diaphragm valve. For the acid transporters, there is a diaphragm at the top of the tank that accounts for any gas expansion and it will burst if the pressure is too great. The transporters are moved by means of a 6000 lb. capacity fork lift. The fork lift prongs engage the transporter through 8" X 5' channel irons that are located under the body of the transporter. The acid, alkali and cyanide transporter are color-coded blue, gray and red respectively to ensure that incompatible wastes are not mixed. The acid transporters are lined with acid resistant materials such as hypalon. The alkali and cyanide transporters are unlined. At

Storage of Containers (Cont'd)

B) Transporter Storage Pad

1) The building used for storage of waste transporters is 58' x 16', has a solid concrete floor and a roof. The floor is divided into three compartments each with a sloping floor to the rear of the compartment, and the side of each compartment and the back of the pad are curbed.

2) Each compartment is sloped so that any liquid falling on the pad will drain to the rear. Transporter tanks are elevated on one foot high legs.

3) The sloped areas have a containment capacity of 2850 gallons, and the building holds thirty (30) transporters with capacities of 375 gallons each.

4) Run-on is prevented from entering the storage building by the curbing around three sides of the building and a berm arrangement at the front of the pad whereby liquid in front of the pad drains in the opposite direction.

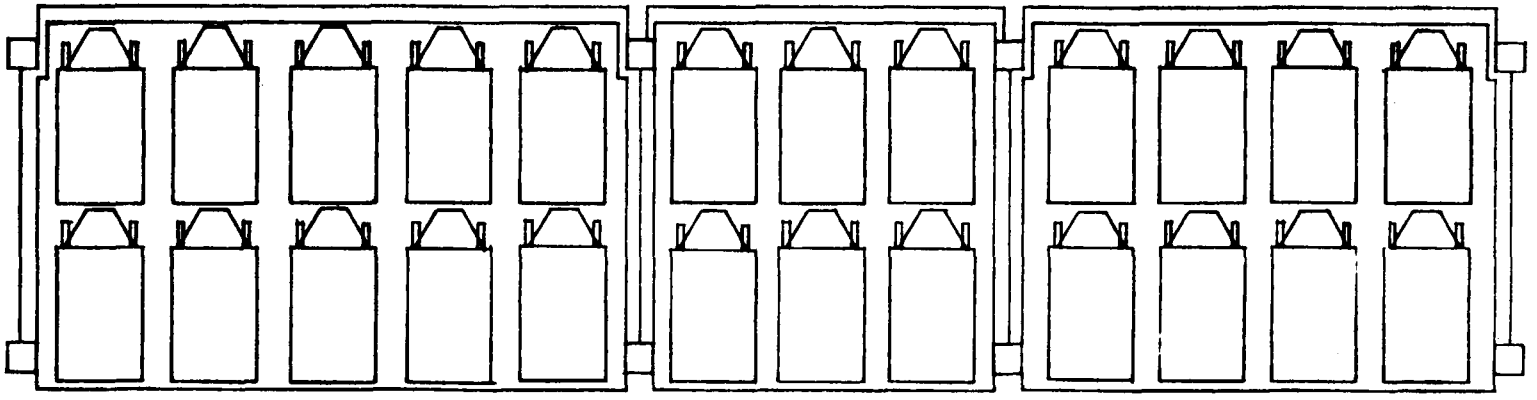
5) Each containment area has a one cubic foot pit at the rear of the compartment which is used to facilitate manual pumping of any accumulated liquids in the containment area to the appropriate treatment.

C) Barrel/Transporter Storage Pad

1) A small storage pad adjacent to the CWTP Main Building is 18 1/2' x 24 1/2' and has a solid concrete floor and a roof. The

FIGURE M-2

TRANSPORTER STORAGE PAD
Illustration of Maximum Transporter Placement



Storage of Containers (Cont'd)

the edge of the Barrel Storage Building there are unloading platforms, each specifically allocated for either the acid, alkali or cyanide transporters. When the transporters are in place, the discharge valve is opened and the waste flows to the appropriate storage vessel.

The transporter storage pad is inspected routinely according to Inspection Guide M-572 of this document and the transporters are routinely inspected and maintained according to Inspection Guide M-403.

3) Each compartment is sloped so that any liquid falling on the pad will drain to the rear. Transporter tanks are elevated on one foot high legs. They are moved by the use of 6000 lb. capacity fork trucks. The prongs can easily be placed underneath the transporters into 8" wide, 5' long channel irons in order to move the transporters. The sloped areas have a containment capacity of 2850 gallons, (see Section IV, Containment Calculations) and the building holds twenty four (24) transporters with capacities of 375 gallons each. The largest of the compartments will contain 1200 gallons. This is easily more then 10% of the 3750 gallons that 10 transporters can hold in this compartment. The other two compartments which can contain 700 and 950 gallons, hold up to six and eight transporters respectively. Each of the containment values is greater than 10% of the volumes of 2250 and 3000 gallons that six and eight transporters can hold respectively.

Storage of Containers (Cont'd)

floor slopes to a containment pit underneath the floor so that any liquid falling on the pad will drain to the center.

2) The containment area can hold 600 gallons of liquid, and the pit is emptied by manual pumping.

3) The storage pad can hold a maximum of 100 barrels or 16 transporters, or a combination of each.

II Containers with no free liquids

A) The majority of liquid wastes in storage at the facility are in bulk storage tanks. No more than 350 barrels of liquids will be stored at any one time in the container storage building, (see Section IA), and these liquids will be either paint solvents or waste oils. Solid material stored in the building consists of solid sulfur, aluminum oxide powders, sodium and potassium salts, and laboratory chemicals. The number of barrels of solids will not exceed the total storage capacity of the building (1000) less the number of barrels of liquid waste already in storage (not greater than 350).

III Ignitable, reactive and incompatible waste

A) Compliance with 264.176 demonstrated on Topographic Map, Section K.

B) Incompatible wastes are stored in non-adjacent compartments of the storage building.

C) Training for waste treatment plant operators includes descriptions of waste, descriptions of possible hazards, and descriptions of incompatible waste.

PRELIMINARY

Storage of Containers (Cont'd)

4) Run-on is prevented from entering the storage building by the curbing around three sides of the building and a berm arrangement at the front of the pad whereby liquid in front of the pad drains in the opposite direction.

5) Each containment area has a one cubic foot pit at the rear of the compartment which is used to facilitate manual pumping. Accumulated liquids will be analyzed for the specific wastes present in that area. If contaminated, the liquid will be pumped to an appropriate transporter for eventual discharge to the appropriate bulk storage tank.

C) Barrel/Transporter Storage Pad

1) A small storage pad adjacent to the CWTP Main Building is 18 1/2' x 24 1/2' and has a solid concrete floor and a roof.

The floor slopes to a containment pit underneath the floor so that any liquid falling on the pad will drain to the center.

2) The containment area can hold 600 gallons of liquid, (see Section IV, Containment Calculations). Any accumulated liquids will be tested for contamination by the material in storage, and then manually pumped to the appropriate treatment tank.

Storage of Containers (Cont'd)

4) Run-on is prevented from entering the storage building by the curbing around three sides of the building and a berm arrangement at the front of the pad whereby liquid in front of the pad drains in the opposite direction.

5) Each containment area has a one cubic foot pit at the rear of the compartment which is used to facilitate manual pumping of any accumulated liquids in the containment area to the appropriate treatment.

C) Barrel/Transporter Storage Pad

1) A small storage pad adjacent to the CWTP Main Building is 18 1/2' x 24 1/2' and has a solid concrete floor and a roof.

The floor slopes to a containment pit underneath the floor so that any liquid falling on the pad will drain to the center.

2) The containment area can hold 600 gallons of liquid, (see Section IV, Containment Calculations) and the pit is emptied by manual pumping.

3) The storage pad can hold a maximum of 88 barrels stored on pallets or 10 transporters, or a combination of each. Generally, only alkali materials are stored on the pad. Transporters and barrel pallets can be stored safely in any number of ways because of the openness of the area. Placement of the maximum number of barrels and the maximum number of transporters is illustrated in Figures M-3 and M-4.

PRELIMINARY

Storage of Containers (Cont'd)

3) The storage pad can hold a maximum of 88 barrels stored on pallets or 10 transporters, or a combination of each. Generally, only alkali materials are stored on the pad. Transporters and barrel pallets can be stored safely in any number of ways because of the openness of the area. Placement of the maximum number of barrels and the maximum number of transporters is illustrated in Figures M-3 and M-4.

4) Aisle space is not needed because of the openness of this area, and the nonflammability of the wastes. This area can be easily reached by all fire control and spill containment equipment.

FIGURE M-3

BARREL/TRANSPORTER STORAGE PAD
Illustration of Maximum Barrel Placement

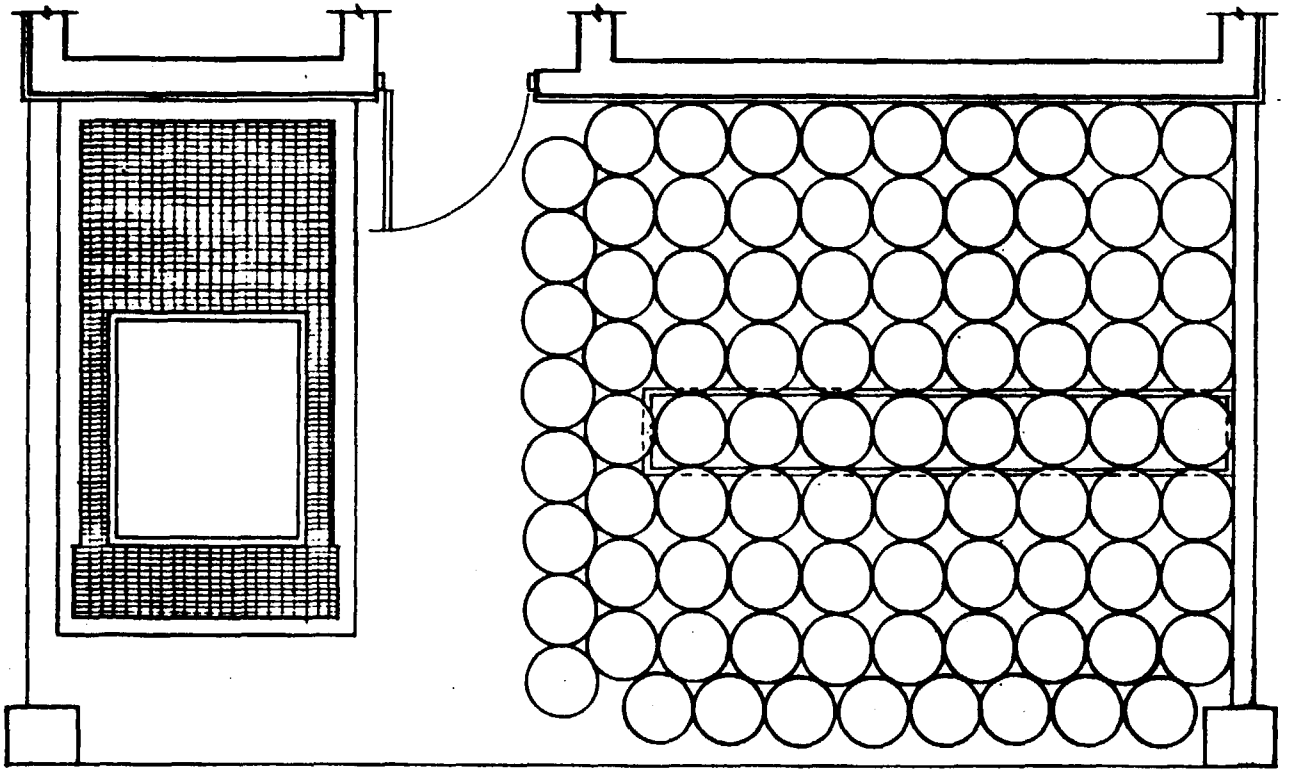
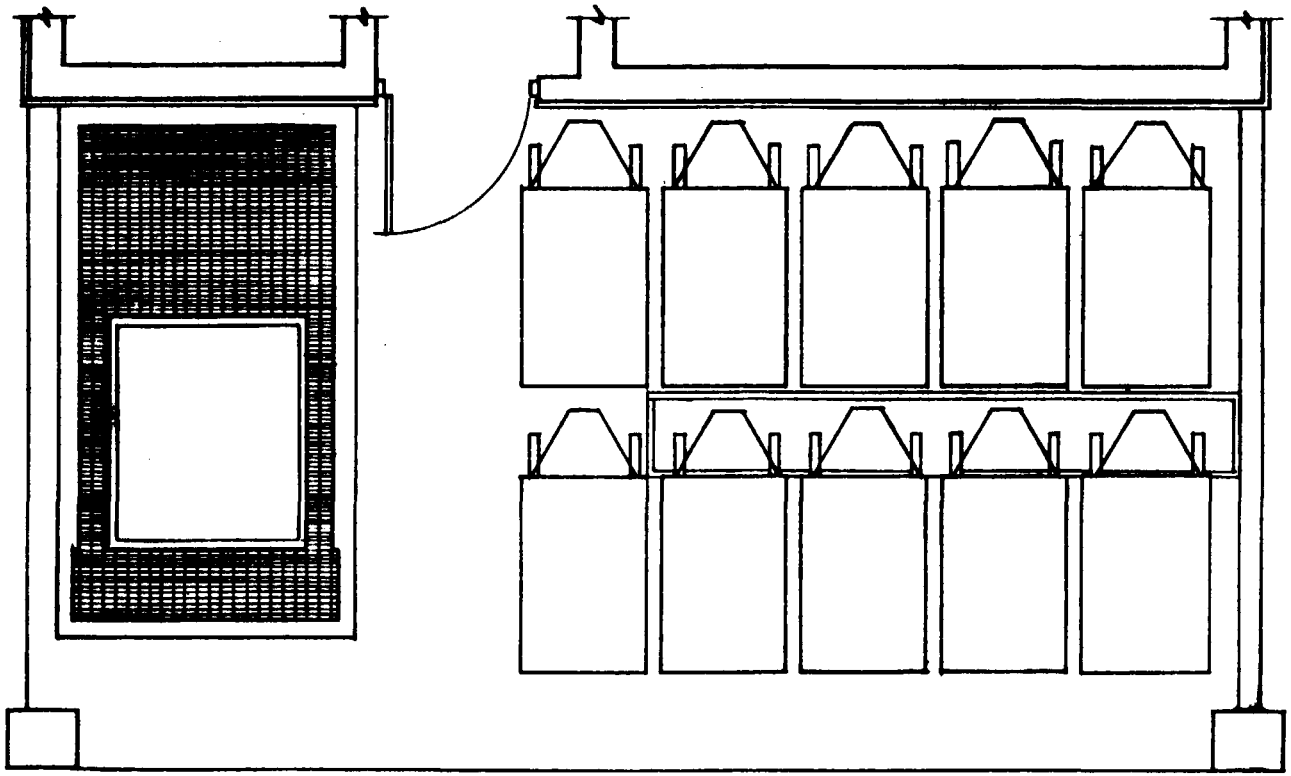


FIGURE M-4

BARREL/TRANSPORTER STORAGE PAD
Illustration of Maximum Transporter Placement



Storage of Containers (Cont'd)

II Containers with no free liquids

A) The majority of liquid wastes in storage at the facility are in bulk storage tanks. No more than 350 barrels of liquids will be stored at any one time in the container storage building, (see Section IA), and these liquids will be either paint solvents or waste oils. Solid material stored in the building consists of solid sulfur, aluminum oxide powders, sodium and potassium salts, and laboratory chemicals. The number of barrels of solids will not exceed the total storage capacity of the building (1000) less the number of barrels of liquid waste already in storage (not greater than 350).

III Ignitable, reactive and incompatible waste

A) Compliance with 264.176 demonstrated on Topographic Map, Section K.

B) Incompatible wastes are stored in non-adjacent compartments of the storage building.

C) Training for waste treatment plant operators includes descriptions of waste, descriptions of possible hazards, and descriptions of incompatible waste.

D) The container storage area is not in an area where there are sources of ignition, open flames, cutting or welding, hot surfaces, frictional heat, sparks, spontaneous ignition, heat producing chemical reactions, or radiant heat. "No Smoking" signs are posted.

E) Standard operating procedure includes the visual inspection of all barrels of waste before acceptance at the storage facility. Liquids are pumped into bulk storage tanks, except for paint solvents and certain waste oils, which are stored in the building prior to vendor disposal. The contents of the building are inspected daily, and the quantity of drums of liquid is never allowed to exceed 350. Storage information is maintained on the computer record keeping system and updated daily. At any time, the types of waste and the exact number of barrels contained in the storage building can be determined by viewing the inventory on a computer screen, and pages of the inventory can be printed out. An example of the computerized inventory of the Barrel Storage Building is Exhibit DD.

F) A scaled Figure M-1 showing aisle space for the maximum planned inventory for the barrel storage building is in this section. Included are descriptions of where different wastes are stored in the area, assuring that incompatible wastes will not come into contact with each other. Because of the openness of the areas and nonflammability of the wastes involved, there is no need to provide aisle space in either the Barrel/Transporter Storage Area or the Transporter Storage Area. Figures M-2, M-3 and M-4 show the arrangements of the maximum number of containers in these areas.

Storage of Containers (Cont'd)

D) The container storage area is not in an area where there are sources of ignition, open flames, cutting or welding, hot surfaces, frictional heat, sparks, spontaneous ignition, heat producing chemical reactions, or radiant heat. "No Smoking" signs are posted.

E) Standard operating procedure includes the visual inspection of all barrels of waste before acceptance at the storage facility. Liquids are pumped into bulk storage tanks, except for paint solvents and certain waste oils, which are stored in the building prior to vendor disposal. The contents of the building are inspected daily, and the quantity of drums of liquid is never allowed to exceed 350. Storage information is maintained on the computer record keeping system and updated daily. At any time, the types of waste and the exact number of barrels contained in the storage building can be viewed on a computer screen.

IV Containment Calculations:

A) Barrel Storage Building

The Barrel Storage Area has five containment areas each with a 2' x 2' x 2.5' containment pit. Four of the containment areas encompass an area with the dimensions 50' x 28.5' and there is a pitch of 1-1/2" from the edge of the areas to the surface of the containment pit. The fith containment area is 50' x 18.42' and the pitch is 3" from the edge of the area to the surface of the containment pit.

1. Containment Volume - Four Areas

Area of Pitch = 50 ft x 28.5 ft - 4 (2 ft x 2 ft) = 1409 ft^2.

Volume of Pitched Area = 1/2 (Area of Pitch) (1 1/2 in.)

$$= 1/2\ (1409\ ft^2)\ 1.5\ in. \times \frac{1\ ft.}{12\ in.}$$

$$= 88.06\ ft^3$$

Volume of Containment Pits = 4 (2' x 2' x 2.5') = 40.00 ft^3

Total = 128.06 ft^3

2. Containment Volume - Fifth Area

Area of Pitch = 50 ft x 18.42 ft - (2 ft x 2 ft) = 917 ft^2.

Volume of Pitched Area = 1/2 (Area of Pitch) (3 in.)

$$= 1/2\ (917\ ft^2)\ (3\ in.)\ \frac{1\ ft.}{12\ in.}$$

IV Containment Calculations (Cont'd)

$= 114.63 \text{ ft}^3$

Volume of Containment Pits = 2 ft x 2 ft x 2.5 ft = 10.00 ft^3

Total $= 124.63 \text{ ft}^3$

3. Total Containment Volume

Total Containment Volume = (Volume of Four Areas) + (Volume of Fifth Area)

$= 128.06 \text{ ft}^3 + 124.63 \text{ ft}^3 \left(7.48 \frac{\text{gal}}{\text{ft}^3}\right)$

= 1890 gal of Total Containment.

B. Transporter Storage Pad

The Transporter Storage Area consists of three separate compartments which contain up to 24 transporters total. The largest compartment can hold 10 transporters. The widths of the three areas are 24.48', 14.17' and 19.53'. The pitch is 10 in. over a 15.67 ft. length.

$$\text{Volume} = 1/2\ (24.48\text{ft} + 14.17\text{ft} + 19.53\text{ft})\ (15.67\text{ft})(10\text{in.})\left(\frac{1\ \text{ft}}{12\ \text{in.}}\right)$$

$= 379.87 \text{ ft}^3 \times 7.48 \frac{\text{gal}}{\text{ft}^3}$

= 2841 gal.

IV Containment Calculations (Cont'd)

C. Barrel/Transporter Storage Area

The Barrel/Transporter area is adjacent to the East side of the Concentrated Waste Treatment Building. It is used for the storage of barrels of waste kolene salt or alkali transporters. The dimensions on the containment area is 16ft long by 2 feet wide by 2.5 feet deep.

Volume = 16 ft X 2 ft X 2.5 ft = $80\ ft^3$

$$80\ ft^3 \times 7.48\ \frac{gal}{ft^3} = 598\ gal$$

SECTON N - STORAGE TANKS

I Design Standards

A) Designs and specifications for tanks and containment are based on Federal, State and local codes and regulations. None of the tanks was specifically designed as a waste storage tank, but each was a no longer utilized spare tank that met the criteria for waste storage. No design specifications are available. It is estimated that each of the tanks was new between the years of 1964 and 1967. Selection of materials used in designs (piping, tanks, coatings, pumping systems, etc.) are based on manufacturer's standard tables and charts showing compatibility of their products with various hazardous and corrosive materials.

II Design Specifications

A) Tanks are constructed of various materials depending on storage requirements.

1) Tanks used to store corrosive materials are constructed of Fiberglass and/or lined steel.

a) Fiberglass is classified as good to excellent for corrosion resistance.

b) Steel tanks are lined with corrosion resistant materials which are classified as good to excellent for corrosion resistance.

2) Tanks used to store non-corrosive materials are constructed of steel, welded and reinforced.

SECTON N - STORAGE TANKS

I Design Standards

A) Designs and specifications for tanks and containment are based on Federal, State and local codes and regulations. Selection of materials used in designs (piping, tanks, coatings, pumping systems, etc.) are based on manufacturer's standard tables and charts showing compatibility of their products with various hazardous and corrosive materials.

II Design Specifications

A) Tanks are constructed of various materials depending on storage requirements.

1) Tanks used to store corrosive materials are constructed of Fiberglass and/or lined steel.

a) Fiberglass is classified as good to excellent for corrosion resistance.

b) Steel tanks are lined with Bolteron or Microsol. Both are classified as good to excellent for corrosion resistance.

2) Tanks used to store non-corrosive materials are constructed of steel, welded and reinforced.

B) Piping system construction materials are compatible with the solutions being piped.

Storage Tanks (Cont'd)

B) Piping system construction materials are compatible with the solutions being piped.

1) Piping systems for conveyance of corrosive materials are constructed of PVC (polyvinylchloride) Schedule 80 (heavy duty) pipe.

2) Piping systems for conveyance of non-corrosive materials are constructed of Schedule 80 seamless steel pipe.

C) Containment

1) All storage tanks are set in concrete containment pits. Both the concrete base and walls are 10" thick with #4 rebar. The walls have water stops at the construction points. The base is underlined with 12" of 3/4" traprock. These pits are coated with a high build "Flakeline" 600 epoxy systems manufactured by the Ceilcote Company, Berea, Ohio. The pits are sectioned in order to keep spills of incompatible wastes separate.

III Tank Specifications

A) The waste storage tanks have the following specifications.

Storage Tanks (cont'd)

1) Piping systems for conveyance of corrosive materials are constructed of PVC (polyvinylchloride) Schedule 80 (heavy duty) pipe.

2) Piping systems for conveyance of non-corrosive materials are constructed of Schedule 80 seamless steel pipe.

C) Containment

1) All storage tanks are set in concrete containment pits. These pits are coated with a high build "Flakeline" 600 epoxy systems manufactured by the Ceilcote Company, Berea, Ohio.

III Tank Specifications

A) The waste storage tanks have the following specifications.

MATERIAL STORED	TANK HEIGHT	TANK DIAMETER	TANK CAPACITY	SHELL THICKNESS
Acid	7'	10'	4000 g	1/2"
	7'	7'	2000 g	1/2"
Solvent	7'	10'	4000 g	1/2"
Chromium	7'	10'	4000 g	1/2"
Alkali	7'	10'	4000 g	1/2"
Cyanide	7'	10'	4000 g	1/2"
	8'10"	7' 8"	2800 g	1/2"

MATERIAL STORED	TANK HEIGHT	TANK WIDTH	TANK DEPTH	TANK CAPACITY	SHELL THICKNESS
Wax/Solvent	7'1"	9'5"	7'6"	2500 g	1/2"

MATERIAL STORED	TANK HEIGHT	TANK DIAMETER	TANK CAPACITY	CONTAINMENT VOLUME AVAILABLE	NOMINAL SHELL THICKNESS	ACTUAL SHELL THICKNESS
Acid	7'	10'	4000 g	6500 gal	1/2"	.280"
	7'	7'	2000 g	6500 gal	1/2"	.440"
Solvent	7'	10'	4000 g	7800 gal	1/2"	.280"
Chromium	7'	10'	4000 g	7800 gal	1/2"	.280"
Alkali	7'	10'	4000 g	8300 gal	1/2"	.880"
Cyanide	7'	10'	4000 g	8300 gal	1/2"	.355"
	8'10"	7'8"	2800 g	8300 gal	1/2"	.730"

MATERIAL STORED	TANK HEIGHT	TANK WIDTH	TANK DEPTH	TANK CAPACITY	CONTAINMENT VOLUME AVAILABLE	SHELL THICKNESS	
Wax/Solvent	7'1"	9'5"	7'6"	2500 g	None	1/2"	.360"

MATERIAL STORED	TANK CONSTRUCTION MATERIAL	PIPING MATERIAL	LINER	DATE LAST LINED
Acid	Steel	PVC	Triple Flux 64	03/24/82
	Fiberglass	PVC	Triple Flux 64	10/25/82
Solvent	Steel	Steel	None	-
Chromium	Steel	PVC	64 (Carbon-Fiberglass)	12/02/82
Alkali	Fiberglass Coated Plywood	Steel	None	-
Cyanide	Steel	Steel	None	-
	Fiberglass	Steel	None	-
Wax/Solvent	Steel	Steel	None	-

PRELIMINARY

Storage Tanks (cont'd)

IV Piping Diagram

A) A diagram of system piping is included as Exhibit V.

V Description of Feed System

A) Storage tanks are fed by gravity flow from transport tanks and by pumping from tankers.

1) Tankers are parked on concrete pads with built in containment in case of spills during unloading operations. Tanker pad containment is built to hold the entire contents of a tanker (5000g) plus the precipitation from a 25 year 24 hour rainfall.

2) Transporters are unloaded on specially constructed ramps located inside the barrel storage building (Section C), which has containment for spills as previously described.

3) No liquid level indicators are currently associated with the storage tanks. However capacitance level indicators with level alarms are planned for the future. Until these indicators are installed, the same procedure followed under interim status will be applied. This entails maintaining sufficient tank freeboard by direct inspections.

Storage Tanks (cont'd)

IV Piping Diagram

A) A diagram of system piping is included as Exhibit V.

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SECTION - O - LIQUID INJECTION INCINERATOR

I Introduction

During early 1979 PWA Management approved an appropriation request to construct a liquid injection industrial waste incinerator. On September 19, 1979 an application to construct and operate this incinerator was submitted to the Connecticut DEP Air Compliance Unit. The Permit to construct the incinerator was granted on August 4, 1980 with construction commencing immediately. The construction was essentially complete in April 1981. Since that time there have been numerous start-up problems including high fan noise levels and high particulate emissions. The incinerator has never been operational to this date. Currently we are waiting for the manufacturer to install a second demister on the exhaust stack to remove entrained particulates. These particulates have been found to be primarily sodium chloride.

There will be four (4) different wastes burned in the incinerator, blend oil, zyglo solution, cyanides and wax/solvents. Each of the wastes is injected into the incinerator from a separate nozzle except the zyglo solution and the cyanide. Because these are basically aqueous solutions with similar atomizing characteristics they are injected using the same nozzle.

The blend oil which is injected in nozzle #1 is not a hazardous waste and would be used for its BTU value. The oil is a blend of oil, from the treatment of soluble oils and waste lubricating oils to give a flash point of 200-250^{o}F. Gas chromatographic analysis of this oil has shown no detectable levels of aromatic or straight chain chlorinated hydrocarbons. No ignitable wastes (flash point less than 140^{o}F) are present in this blend.

Nozzle #2 injects either cyanide or zyglo solutions. The zyglo solutions are also non-hazardous and will be burned only as a method of disposal. The cyanides are from spent plating and cleaning solutions. The main hazardous constituents in this waste and their respective EPA hazardous waste numbers are sodium cyanide, P106; potassium cyanide, P098; with minor amounts of copper cyanide, P029 and nickel cyanide P074. There are also traces of cadmium, silver, iron and zinc. In addition the cyanide wastes are also listed having EPA hazardous waste numbers of F007, F008, and F009.

Wax/solvent mixtures, oil/solvent mixtures and just solvent mixtures will be incinerated from nozzle #3. The wax is a non-hazardous straight chain paraffinic hydrocarbon wax used as a masking wax during plating. The oils contained in the mixtures are non-hazardous lubricating oils used in various machining processes. The solvents which will be burned are described in more detail in Section B, III E, F, and G.

II Engineering Description of Incinerator

The incinerator located at the PWA concentrated Waste Treatment Plant is a Burn-Zol Model 272 liquid waste incinerator. Physically the incinerator is 6'6" O.D. x 21' 3" high with 3" of forced air cooling between the outer stainless steel shell and the steel inner shell. There is then a minimum of 6" of high temperature acid resistant refactory lining. The primary and secondary combustion chambers and the tertiary holding chamber are 5' in diameter or 19.5 square feet in area.

The primary chamber has two (2) dual fuel Maxon 3" multifire II burners rated at 1.5 MM BTU/hour each. These burners use either natural gas or No. 2 fuel oil and are presently set up for natural gas. There are also (3) three nozzles in this chamber for injection of wastes. Each nozzle is air cooled and is accessible from the outside for interchanging nozzles for proper atomization of waste charges.

The secondary chamber has one (1) dual fuel Maxon 4" multifire II burner rated at 2.5 MM BTU/hour. All burners have Protectofier flame safeties on the pilots and 20:1 throttleable and proportional control. Refer to Exhibit W, pages 1-5, for Burn-Zol Specifications of the incinerator and sketch of equipment layout.

The temperature in each burner zone is controlled by a Partlow proportional controller from a thermocouple located in the zone. In the primary zone there is also a second thermocouple that goes to a Partlow High temperature limit control. At the exit of the incinerator is a fourth thermocouple that goes to a Partlow 24 hour circular chart recorder for continuous record of incinerator exit temperature.

Combustion products from the incinerator are ducted to an Eclipse Model 3 HRW waste heat boiler which generates hot water. In the inlet duct to the boiler is a thermocouple connected to another Partlow proportioning temperature controller. This controller through a cooling blower and damper, tempers inlet air to the boiler at 1600^{0}F to protect the boiler from overheating. A pitot tube with indicator is in the duct before this blower to indicate combustion gas velocity. Generated hot water is presently being cooled in a B & G tube and shell heat exchanger with the cooling water being dumped to a NPDES permitted cooling water discharge. Eventually this will be used for building heating.

From the boiler combustion products are then ducted to a Hydronics Model VS 72 venturi scrubber and a Hydronics Model PTS 72 packed tower counterflow scrubber operating with caustic wash. Both scrubbers are fabricated of stainless steel and the tower contains polypropylene Tellerette packing. To protect the packing there is a thermocouple and temperature switch in the inlet duct that will shut down the incinerator before the packing has any thermal damage. There is also a liquid manometer across the venturi to indicate pressure drop. The pressure drop is used as an indication of air velocity and venturi scrubber

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efficiency. The venturi scrubber is designed for particulate removal while the packed tower has high gas/liquid area for removing fine particulate and neutralizing acids in the waste gas stream. At the exit of the scrubbers is a demister system to remove liquid entrainment in the air stream. The caustic wash is contained in a 400 gallon tank and circulated through the scrubbers at 65 gpm. The pH is controlled at 7.0-8.5 by addition of liquid sodium hydroxide. The pH controller is a Serfilco Model 440.

The air from the demisters is ducted through a damper system to one of two air prime movers. These are New York Blower Series 45 Gl Fans, size 264 with 60 HP motors rated at 4000 cfm at 37" water. One blower is the prime mover with the second used as a back-up. Any failure of the prime mover and the system will automatically switch to the back up. This is controlled by a pressure switch in the inlet duct to the blowers. On the back-up blower the system is strictly in cool down. No burner operation or waste feed will take place while the back up blower is running.

The exhaust from the blower is directed out of the building. In this exhaust stack is a sampling port that is also valved to the inlet duct of the scrubbers. Either location can be monitored by a Charlton Technology Inc. Incinerator Monitoring System that monitors CO and O_2. Company brochure is included as Exhibit CC.

The incinerator system is monitored and controlled by an Industrial Solid State Control, Inc. Model IPC 90 microprocessor. This microprocessor controls the start up procedure to insure that all items are functioning properly before the next step in the operating procedure can be initiated. The microprocessor also controls the ability of the operator to energize the waste feed pumps. This is done by having a relay control all power into the pump control panel and this relay is energized from the microprocessor only when all the safety and control

is designed for particulate removal while the packed tower has high gas/liquid area for removing fine particulate and neutralizing acids in the waste gas stream. At the exit of the scrubbers is a demister system to remove liquid entrainment in the air stream. The caustic wash is contained in a 400 gallon tank and circulated through the scrubbers at 65 gpm. The pH is controlled at 8.0-8.5 by addition of liquid sodium hydroxide. The pH controller is a Serfilco Model 440.

The air from the demisters is ducted through a damper system to one of two air prime movers. These are New York Blower Series 45 Gl Fans, size 264 with 60 HP motors rated at 4000 cfm at 37" water. One blower is the prime mover with the second used as a back-up. Any failure of the prime mover and the system will automatically switch to the back up. On the back-up blower the system is strictly in cool down. No burner operation or waste feed will take place while the back up blower is running.

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The incinerator system is monitored and controlled by an Industrial Solid State Control, Inc. Model IPC 90 microprocessor. This microprocessor controls the start up procedure to insure that all items are functioning properly before the next step in the operating procedure can be initiated. The microprocessor also controls the ability of the operator to energize the waste feed pumps. This is done by having a relay control all power into the pump control panel and this relay is energized from the microprocessor only when all the safety and control

interlocks are satisfied. These interlocks are:

1. Incinerator is at set point temperature.
2. Boiler water at the proper level.
3. Temperature into scrubbers is below 150^{0} F.
4. Scrubber pH in proper range.
5. Main system blower is functioning properly.
6. CO and O_2 in exhaust gases are within set limits.
7. Waste flow rates not exceeding 0.8 gpm.
8. Control air pressure within proper range.

Once the pump control panel is energized any one of four (4) waste feed pumps can be energized. These are blend oil that feeds into waste nozzle #1; either cyanide or zyglo that feeds into waste nozzle #2; or wax/solvents that feeds into waste nozzle #3. The line to each of the nozzles has a solenoid valve that is energized open when the pump for that line is energized. Each line also has a Foxboro differential pressure flow transmitter Model E13DM-1KAM2-1F0U with a stainless steel orifice.

This signal is sent to a Foxboro Model 65PV-JG indicator and Model 63R flow switch. Each of the flow indicating systems is calibrated at 1 gpm full scale. Normal operating conditions will be 38 gph with a maximum rating of 48 gph. These feed rates will be monitored and recorded by the operator. In the piping just before the nozzle is also a sampling valve to collect waste samples for analysis. The nozzles in each line are from Sonicore Atomizer Division of Sonic Development Corporation and were picked for atomization to give most efficient burn.

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1. Incinerator is at set point temperature.
2. Boiler water at the proper level.
3. Temperature into scrubbers within limits.
4. Scrubber pH in proper range.
5. Main system blower is functioning properly.
6. CO and O_2 in exhaust gases are within set limits.
7. Waste flow rates not exceeding limits.
8. Control air pressure within proper range.

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III Suggested Operating Conditions

The suggested operating conditions for burning either hazardous waste are:

1. Combustion zone temperature of 1832 to 2000^{0}F.
2. Waste flow rates of from 38 gph normal to a maximum of 48 gph.
3. CO amounts in the exhaust stack of 0 to a maximum of 50 ppm.
4. Maintaining the pH of the scrubber water between 7.0 and 8.5
5. Maintain a 26 to 30" water pressure drop across the venturi scrubber and 0.25 to 0.5" water negative pressure at the inlet to the waste heat boiler. These conditions will indicate proper combustion gas velocity and will control fugitive emissions by assuring the system is under negative pressure.
6. Incinerator combustion zone is 5 ft diameter x 19 ft high = 372 cu ft volume less approximately 40 sq ft for baffles and walls = 332 cu ft. The main combustion blower and the three blowers at the nozzles supply 1600 scfm of air, plus the equivalent volume of 0.8 gpm of liquid is 180 cfm. Therefore 1780 cfm x

   $\frac{2260}{530}$ = 7590 acfm ÷ 60 = 126.5 acfs.

   Residence time in the incinerator is then 332 ÷ 126.5 = 2.6 seconds.
7. With the caustic scrubber the removal of hydrochloric acid is expected to be 99.9%.
8. The stack gas flow is expected to be 3700 to 4300 ACFM at 115 to 140^{0}F, which is a velocity of 3100 to 3600 FPM.

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PRELIMINARY

TABLE OF EXHIBITS

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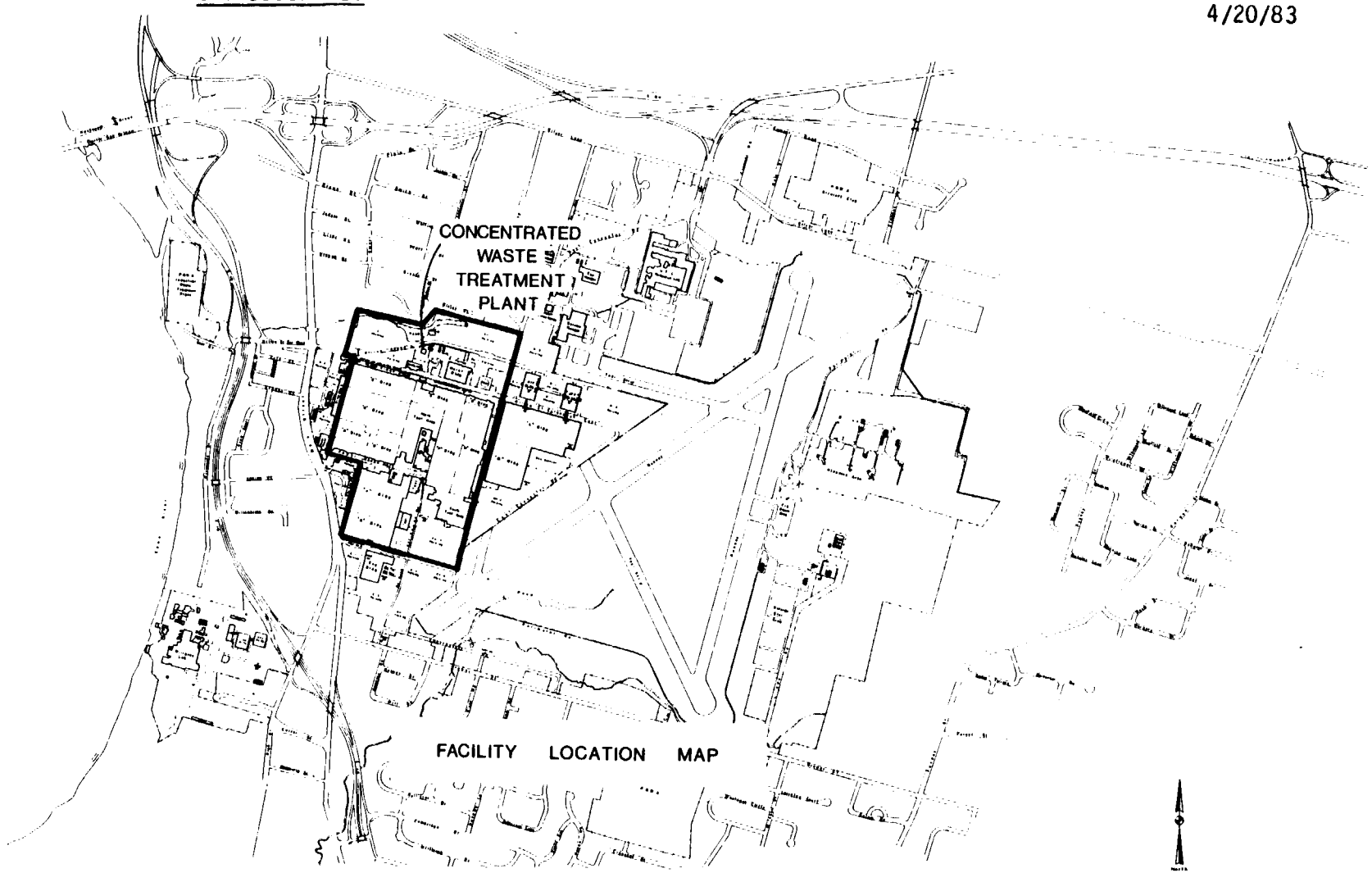

CONCENTRATED
WASTE
TREATMENT
PLANT
FACILITY LOCATION MAP
PLOT PLAN
PL-19322-R

EXHIBIT A

CONCENTRATED WASTE TREATMENT PLANT LOCATION MAP

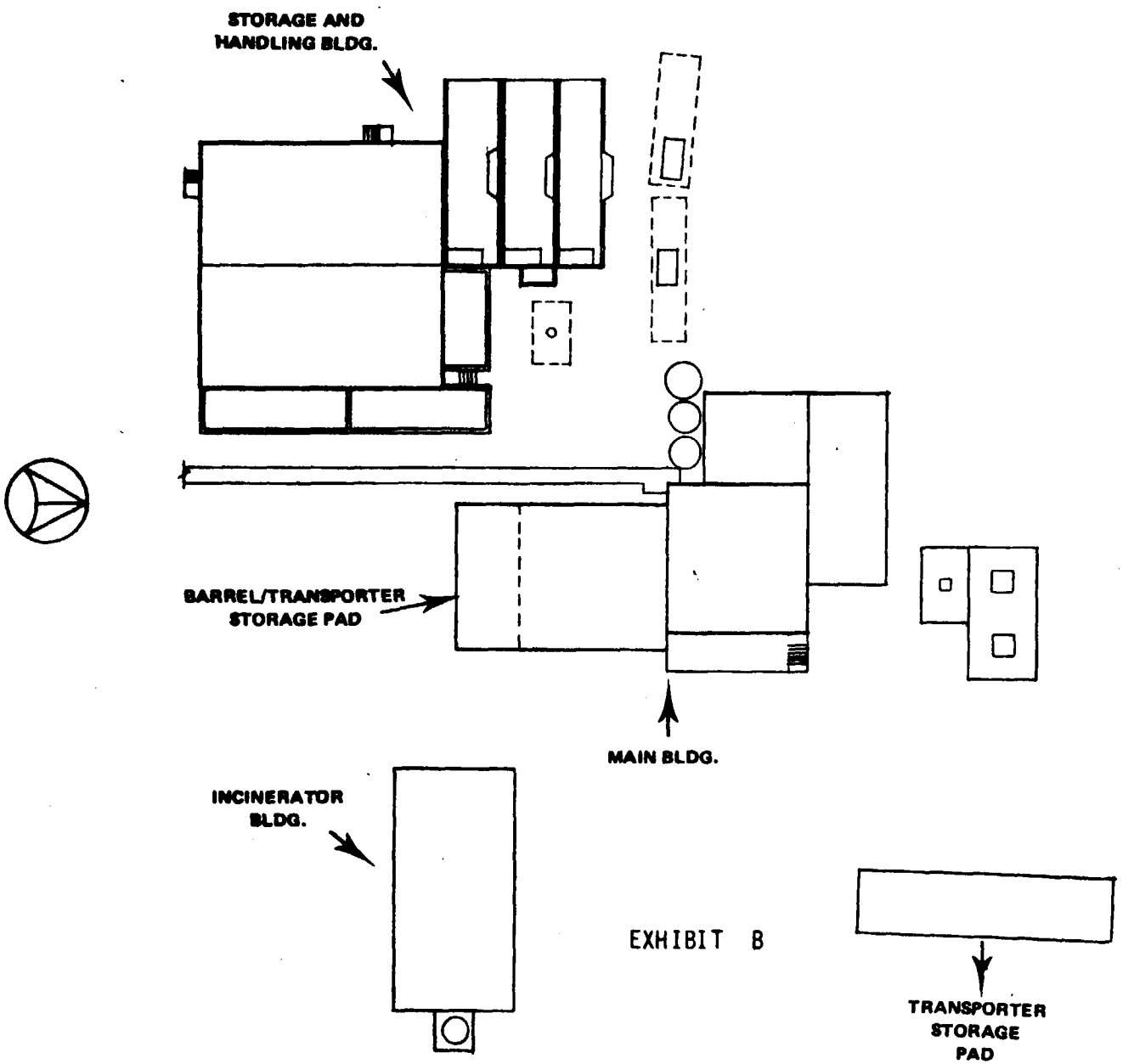


EXHIBIT B

CONCENTRATED WASTE TREATMENT PLANT LOCATION MAP

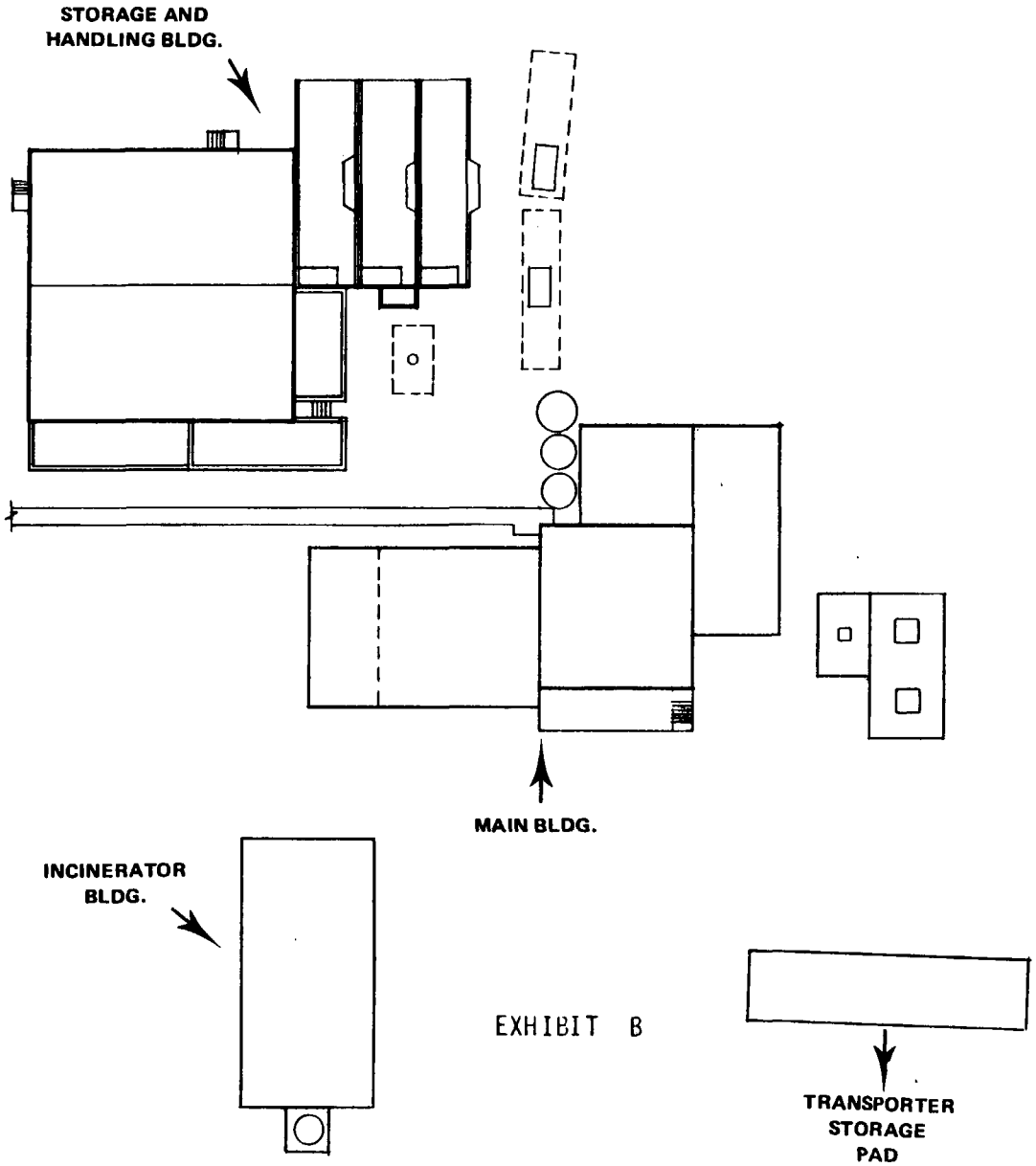
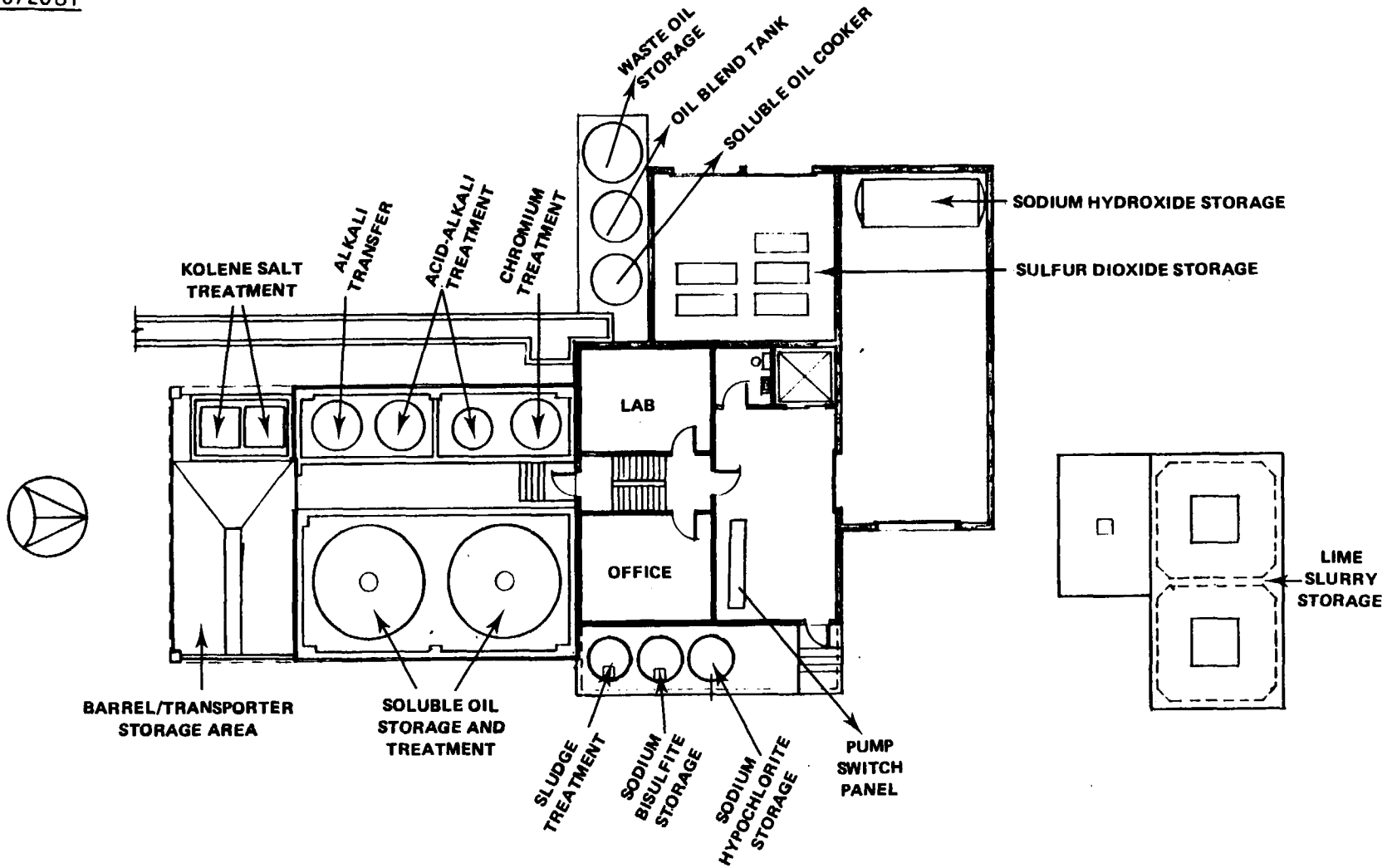


EXHIBIT B

CONCENTRATED WASTE TREATMENT PLANT
MAIN BLDG.

RCRA Part B Permit Application
United Technologies
Pratt & Whitney Aircraft
CTD 990672081

4/20/83



Revised: December, 1982

EXHIBIT C

CONCENTRATED WASTE TREATMENT PLANT
STORAGE AND HANDLING BLDG.

RCRA Part B Permit Application
United Technologies
Pratt & Whitney Aircraft
CTD 990672081

4/20/83

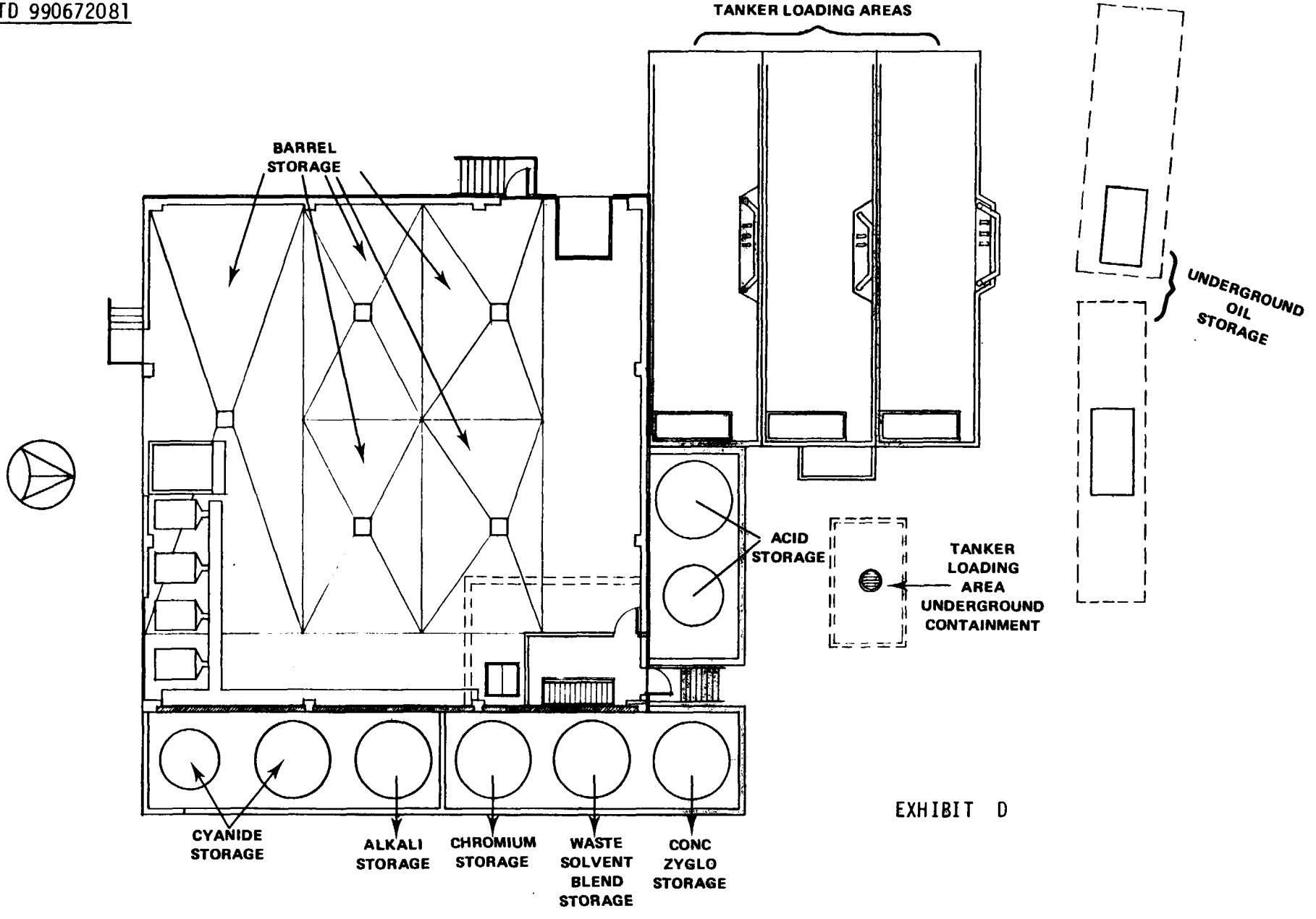


EXHIBIT D

INTERNAL WASTE MANIFEST

MANIFEST № 138216

GENERATOR COMPLETE THIS SECTION				
GENERATING DEPT. NUMBER	PLANT CODE	SUPERVISOR (PRINT AND SIGN)	PHONE	DATE
WASTE MATERIAL		PMC, PWA, PS #		
TRADE NAME		CHEMICAL NAME		
MANUFACTURER		ADDRESS		
NUMBER OF CONTAINERS	SIZE OF CONTAINER	TYPE (BARREL, BOTTLE, BOX, BAG, ETC.)		

TRANSPORTER COMPLETE THIS SECTION				
DATE PICKED UP	SHIFT PICKED UP	DELIVERED TO	DATE DELIVERED	DRIVER

PLANT ENGINEERING COMPLETE THIS SECTION				
NAME OF WASTE INSPECTOR	RECEIVED AT		CWTP RECEIVED WT.	
			STORAGE LOC. CODE	INITIALS
DATE AND SHIFT ACCEPTED	ITEM IDENT CODE	PLANT ENGINEERING RECEIVED WT.		
STORAGE LOCATION	TRANSFER #	LBS. GROSS		LBS. GROSS
WASTE MATERIAL IS ☐ ACCEPTED ☐ REJECTED (SEE BACK OF CARD)		LBS. TARE		LBS. TARE
		LBS. NET		LBS. NET

PWA FORM 6096 REV. 12-80 (FRONT)

EXHIBIT E

THE MINGES ENVIRONMENTAL LABORATORY

A division of The Minges Associates, Inc.
11 Avon Park North, P.O. Box 657, Avon, CT 06001
203-677-8309

Lawton S. Averill, Laboratory Director
Catherine M. Pintavalle, Chemist
Tara L. Vander Els, Chemist

REPORT ON LABORATORY EXAMINATIONS

TCID# 990672081

Pratt & Whitney Aircraft
Maintenance Building
Mail Stop 122-12
East Hartford, CT 06108
Att: Linda Biagioni

Date: November 29, 1982

SAMPLE DATA: Collected By: Pratt & Whitney Aircraft

SAMPLE NO.	DESCRIPTION OF SAMPLE
112-55-6	Bag 24988.
112-55-6E	100 grams of Sample No. 112-55-6, mixed with distilled water and 400 ml. of 0.5N acetic acid to a total volume of 2000 ml., mixed for 24 hours, settled and filtered through 0.45 micron filter. Filtrate was tested.
112-55-17	Sample of nickel carbonate, B-29, 10-19-82.

LABORATORY FINDINGS: (milligrams per liter, mg/l, except as noted)

ANALYSIS FOR	SAMPLE NO. 112-55-6	112-55-6E		112-55-17	
pH of 10% Slurry	9.5			10.2	
Solids, Total percent	89.6			89.7	
Tests are percent of dry Weight					
Nickel	41.9			38.4	
Tests are mg/l in Filtrate					
Arsenic	less than 0.01				
Selenium	less than 0.01				
pH		7.0			

Note: Sample No. 112-55-6 appears to be nickel carbonate also. The higher percentage of nickel is most likely due to the formation of nickel oxide due to the release of carbon dioxide. This is supported by the drop in pH.

Lawton S. Averill
The Minges Environmental Laboratory

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Lawton S. Averill, Laboratory Director
Catherine M. Pintavalle, Chemist
Tara L. Vander Els, Chemist

REPORT ON LABORATORY EXAMINATIONS

Tc Chem
CTD 990672081

Pratt & Whitney Aircraft
Maintenance Building
East Hartford, CT 06108

Date: October 20, 1982

SAMPLE DATA: Att: Linda Biagioni

Collected By: Pratt & Whitney Aircraft

SAMPLE NO.	DESCRIPTION OF SAMPLE
112-55-1	Sample of rubber received October 7, 1982.
112-55-1E	100 grams of Sample No. 112-55-1 mixed with distilled water and 1.0 ml. of 0.5N acetic acid to a total volume of 2000 ml., mixed for 24 hours, settled and filtered through 0.45 micron filter. Filtrate was tested.

LABORATORY FINDINGS: (milligrams per liter, mg/l, except as noted)

ANALYSIS FOR	SAMPLE NO. 112-55-1			SAMPLE NO. 112-55-1E	
pH of 10% Slurry	6.4		Tests are mg/l in Filtrate		
Solids, percent	99.7		Cyanide, Total	0.00	
			pH	4.8	

Lawton S. Averill
The Minges Environmental Laboratory

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203-677-8309

Lawton S. Averill, Laboratory Director

Catherine M. Pintavalle, Chemist
Tara L. Vander Els, Chemist

REPORT ON LABORATORY EXAMINATIONS

Pratt & Whitney Aircraft
Maintenance Building
400 Main Street
East Hartford, CT 06108
Att: Linda H. Satzuk

Date: June 7, 1979 4/20/83

SAMPLE DATA: Collected By: Pratt & Whitney Aircraft

SAMPLE NO.	DESCRIPTION OF SAMPLE
500-4899	Sample of waste cyanide cleaning solution.

LABORATORY FINDINGS: (milligrams per liter, mg/l, except as noted)

ANALYSIS FOR	SAMPLE NO. 500-4899				
pH of 10% Solution	11.3				
Total Solids	190,000				
Metals					
Aluminum	42				
Cadmium	144				
Chromium Hexavalent	0.00				
Total	18				
Cobalt	20				
Copper	300				
Iron	400				
Nickel	5840				
Silver	130				
Zinc	11				

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Catherine M. Pintavalle, Chemist
Tara L. Vander Els, Chemist

REPORT ON LABORATORY EXAMINATIONS

Pratt & Whitney Aircraft
Maintenance Bldg.
East Hartford, CT 06108

Date: February 27, 1979

Att: Linda Satzuk

SAMPLE DATA:

Collected By: Pratt & Whitney Aircraft

SAMPLE NO.	DESCRIPTION OF SAMPLE
500-4491	Sample of 9015, wax after distillation collected February 7, 1979 from Dept. No. 32 Rec Crib.

LABORATORY FINDINGS:

(milligrams per liter, mg/l, except as noted)

ANALYSIS FOR	SAMPLE NO. 500-4491				
NSL Sample No.	29393				
Caloric Value	12,995 BTU/lb.				
Flash Point (Open)	240°F				
Percent Solvent (at 384°F)	33%				

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203-677-8309

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Tara L. Vander Els, Chemist

RCRA Part B Permit Application
United Technologies
Pratt & Whitney Aircraft
4/20/83

REPORT ON LABORATORY EXAMINATIONS

TC0 Client: CTD 990672081 Pratt & Whitney Aircraft
Maintenance Building
East Hartford, CT 06108

Date: July 10, 1981

SAMPLE DATA: Att: Linda Satzuk Collected By:

SAMPLE NO.	DESCRIPTION OF SAMPLE
	Two samples of waste marked hydrazine picked up on July 6, 1981 at Pratt & Whitney Aircraft, East Hartford from Linda Satzuk.
500-8484	Sample labeled "Hydrazine waste 7-2-81", Dark.
500-8485	Sample labeled "Hydrazine waste 7-2-81", Light.

LABORATORY FINDINGS: (milligrams per liter, mg/l, except as noted)

ANALYSIS FOR	SAMPLE NO. 500-8484	500-8485			
pH, 10% solution	0.0	0.0			
Specific gravity grams/ml	1.818	1.798			
Sulfate as SO_4	1,620,000	1,520,000			
Sulfuric Acid, percent	91	88			
Hydrazine	None Detected	None Detected			

Lawton S. Averill
The Minges Environmental Laboratory

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203-677-8309

Lawton S. Averill, Laboratory Director
Catherine M. Pintavalle, Chemist
Tara L. Vander Els, Chemist

REPORT ON LABORATORY EXAMINATIONS

TCD-990672081

Pratt & Whitney Aircraft
Maintenance Building
Mail Stop 122-12
East Hartford, CT 06108
Att: Linda Biagioni

Date: November 1, 1982

SAMPLE DATA: Collected By: Pratt & Whitney Aircraft

SAMPLE NO.	DESCRIPTION OF SAMPLE
112-55-2	Bag 25F

LABORATORY FINDINGS: (milligrams per liter, mg/l, except as noted)

ANALYSIS FOR	SAMPLE NO. 112-55-2				
pH of 10% Slurry	1.2				
Total Solids, percent	82.6				
Results as percent of Dry Weight					
Iron	34.9%				
Chloride	38.1%				
Note: It appears that this compound is almost entirely ferric chloride.					

Lawton S. Averill
The Minges Environmental Laboratory

CERTIFICATE OF ACHIEVEMENT

THIS IS TO CERTIFY THAT

Lawrence Luci

HAS SATISFACTORILY COMPLETED

Handling Hazardous Waste 584.10T

6/12/84
Date

Sandy J. Sucy
Instructor

UNITED TECHNOLOGIES
PRATT & WHITNEY AIRCRAFT
Manufacturing Division

M. Cook Jr.
Supervisor

EXHIBIT L

EXHIBIT M
JOB DESCRIPTION FOR THE POSITION OF CHEMICAL ENGINEER

Perform technical and analytical work requiring the analysis and evaluation of chemical data to determine the feasibility of reclaiming industrial wastes, find cost effective methods of disposing of wastes and controlling air and water pollution and to ensure company compliance with applicable federal and state industrial waste laws and regulations.

Work from general statements of objectives to make studies and conduct investigations with a view toward cost reduction and avoidance and providing more effective control over effluents and wastes. Determine the scope of the assignment, extent of investigation required, and significant elements that should be considered in making studies and reaching conclusions. Make inspections, set up recording instruments to monitor effluents, run experiments, and search trade journals and similar publications to obtain data for analysis. When the study shows the need for new equipment, check manufacturer's catalogues and specifications, or contact suppliers to determine if something suitable is available commercially. If not, design equipment and work with consultants, engineering, and design groups on the more complicated equipment required to reclaim, control or dispose of chemical wastes and effluents. Obtain prices on equipment, and estimate the cost of labor and material required for installation or obtain estimates on more complicated work from trades groups and consultants. Investigate the feasibility of coating pipes, ducts, tanks and similar vessels with plastic and other synthetic coatings as protection against corrosive solutions and vapors. Prepare and submit to superiors reports on studies, including recommendations on feasibility cost of setting up and operating the process, and potential savings that may be realized.

Investigate problems arising from air and water pollution to determine what can be done to minimize or eliminate the condition. Analyze samples to identify contaminants, locate their source and determine whether effluents can be controlled economically or whether the process or operation can be changed to eliminate or minimize pollution. Run tests on new chemicals being considered for use in the plant to determine whether they can be disposed of safely and economically with existing equipment. If not, work with operating department supervisors to determine if suitable substitutes are available that present fewer waste-disposal problems. Establish specifications for chemicals used in disposing of wastes and set up testing procedures to control their quality. Establish, review and revise Pratt & Whitney Aircraft standard procedures for the treatment, handling and disposal of industrial wastes. Attend conferences and read Federal Registers, Technical Journals and other papers to keep abreast of changing industrial waste laws and regulations and technological advances in the field of industrial waste reclamation and

Position of Chemical Engineer (Cont'd)

disposal. Set up Laboratory experiments to determine whether new techniques and methods are useful at Pratt & Whitney Aircraft. Lend technical expertise and guidance to branch plant personnel engaged in the treatment, transportation or storage of industrial wastes.

Establish specifications and standards for vendor contracts relating to industrial waste treatment, disposal or transportation, determine vendors most qualified to do the work and monitor the work of vendor to ensure all specifications and terms of the contract are being met.

EXHIBIT N
JOB DESCRIPTION FOR THE
POSITION OF MECHANICAL ENGINEER, FACILITIES

Perform, direct and oversee engineering work on assigned major projects involving the design, installation and maintenance of plant facilities.

Work from general directions to direct the analysis of requirements and the design of facilities such as heating and ventilating, air conditioning and engine test fuel systems. Compile data and make studies of requirements to meet current needs and anticipated future expansion, and to determine the conditions such as population densities, heat transfer characteristics of building, health hazards and explosive mixture which must be considered in designing a system. Make analyses of existing systems to determine if they can be altered to handle additonal loads or to increase efficiency. Make cost estimates of alternative methods of doing the work on which important decisions involving large capital expenditures will be based.

Direct the preparation of detail drawings and the writing of specifications covering the work to be done. Plan and lay out work for designers assigned to projects and make up sketches to guide them in preparing detail drawings. Assign detail work to designers such as the less complicated analysis work and field work on the job, preparatory to formulating plans and specifications. Instruct them in the requirements of the work to be done and outline a course to follow in making analyses. Check work to make sure it is complete and accurate, and in compliance with applicable codes and standards. Review specifications to make sure that they adequately cover the work to be done, and are written clearly and concisely.

Establish quality standards for all phases of the work. Coordinate the work of the group with that of others working on a project in order to minimize the chances for error and to make sure the work is done efficiently, is completed as economically as possible, and in accordance with schedules. Contact vendors' representative to discuss projects and obtain data on suitable equipment available. Oversee field work on major projects to make sure that it is done in a workmanlike manner and all specifications and terms of the contract are being met. Call to attention of contractors' representatives substandard work and any deviations from specificaitons and contract terms detected in inspecting work, and work with them to make sure thy are corrected.

Keep up with the state of the art in his field and constantly review new techniques, developments and equipment for possible application to the requirements of his work.

EXHIBIT O
JOB DESCRIPTION FOR THE
POSITION OF LEAD FACILITIES ENGINEER

Plan and assign work, oversee activities, and work with a group engaged in performing architectural, mechanical, or structural engineering and design work on major projects involving constructon and installation of plant facilities and production support equipment, or a group engaged in performing similar work on production test facilities.

Work from generally defined objectives to direct the analysis of requirements and the planning involved in preparing preliminary plans, and estimates, working drawings, and specifications for various types of mechanical and structural installation. Have studies made to determine if existing air, water, gas, ventilating, and other systems have the capacity to handle load requirements of new structures or additional equipment. If not, determine additional pumps, compressors, and other primary equipment required, where they should be located, and the routing of mains and feeders to tie them into existing networks. Have other studies made of materials and equipment specifications, and other performance data to design the structures and systems best suited for the particular use. Determine if suitable equipment is available commercially, or if it must be designed to meet a peculiar requirement. Supervise the development of engineering and cost data for various alternative proposals on which important decisions involving large capital expenditures will be based. Provide technical information and advice which should be considered in reaching a decision on whether or not to proceed with the proposed work. Work with Purchasing Department in selecting vendors who have the capital, equipment, and skills required to do the work to bid on the job. Review bids and recommend the contractors and vendors that are better qualified to handle the work.

Establish quality standards for all phases of the work. Oversee field work on major projects to be sure it is done in a workmanlike manner, and all specifications and terms of the contract are being met. Call to attention of contractors, substandard work, and any deviations from specifications and contract terms, and work with them to make sure they are corrected.

Supervise engineers, designers, and draftsmen in the unit, and instruct them in the proper methods and procedures to follow. Follow up to make sure work is being done properly, complies with applicable building, fire, and safety codes, and that specifications are written clearly. Assist individuals with difficulties encountered in their work. Apply the Corporate Equal Employment Opportunity Policy and implement effective affirmative action to assist in attainment of the goals and objectives of the facility. Maintain discipline within the unit, taking action as required to make sure instructions, and company and departmental rules and regulations are carried out. Recommend disciplinary action when warranted. Make effective recommendations concerning changes of status and performance rating for employees supervised.

Position of Lead Facilities Engineer (Cont'd)

In the Test Engineering unit, perform work similar to that described above, including noise abatement, aerodynamics, and stress analyses and evaluations, associated with systems and equipment required to test engines.

EXHIBIT P
JOB DESCRIPTION FOR THE
POSITION OF CHEMICAL WASTE TREATMENT PLANT OPERATOR

Treat concentrated waste chemicals, waste oils, contaminated rinse and other process water, and other waste material to neutralize pollutants and prepare materials for disposal.

Work from generally defined procedures in processing a wide variety of wastes. Check paper work accompanying incoming acids, alkalis and similar wastes to determine whether the type can be mixed with those already on hand, or whether they should be treated separately or used in treating other wastes. Dissolve dry chemicals in water or other wastes in receiving tank to prepare them for treatment. Be alert in dumping wastes into receiving tank to detect any indications of unforeseen reactions, and take action promptly to avoid accidents. Dilute strong acids to reduce hazards in processing or handling. Periodically test samples of treated wastes and continue adding chemicals until wastes have been rendered harmless. Periodically check flash point of oil in receiving tank and add higher flash point oils as required to prepare it for use as fuel.

Operate a fully automated, flow-through liquid waste treatment facility to remove contaminants from water used in industrial processes. Periodically test samples of treated water to make sure automatic sensing and control equipment is working properly. Mix chemical solutions used in the treatment of wastes, open clogged chemical feed lines, and perform other such work to keep the facilities running. At the pretreatment plant, where pollutants are neutralized, test samples of incoming wastes to detect unusually heavy concentrations of pollutants. Notify foreman of any that are found so a check of the area from which they are coming can be made for possible leaks or spills. At the Colt Street plant, where waste solids and oil are removed, test samples of incoming wastes to make sure pretreatment equipment is working properly. Monitor the process (flocculation) which removes solids, and test samples of clean water to make sure automatic equipment is holding pH at proper level. Operate vacuum filter to separate sludge from water and dry it.

Take action promptly in emergencies, such as when leaks occur in chlorine and sulphur dioxide systems, to clear the area, stop the flow and locate leaks. Make temporary repairs and notify proper repair group to have permanent repairs made. Replace valves, gaskets and short sections of pipe and tubing, and perform other similar types of repair work. Check linings on transport and processing tanks for evidence of cracks and other indications of deterioration. Remove debris from around oil skimmers on Willow Brook Pond, lubricate bearings and perform other preventive maintenance work on skimmers and dam, and adjust dam as necessary to control level of water in pond.

EXHIBIT Q
JOB DESCRIPTION FOR THE POSITION OF FOREMAN, MAINTENANCE

Responsible for supervision of a group of employees carrying out one or more duties including carpentry, millwright, pipefitting, painting, sheet metal fabrication and welding while engaged in construction or maintenance work on plant facilities.

Plan over-all activities of the group, supervise the work, establish priorities for carrying out assignments, and coordinate the work of the group with that of other trade groups to meet schedules and do the work efficiently. Work with other supervisors to encourage an exchange of ideas and make the department more effective. Assist subordinates in solving unusual problems encountered in their work such as determining best method of by-passing obstructions, making emergency repairs, or interpreting complicated drawings and specifications. Review findings and recommendations of subordinates and determine action to be taken.

Recommend changes in manpower to meet changing needs considering the type of work to be done and the skills required to do it efficiently. Plan a course of action to develop the skills required to meet current and anticipated future needs, actively encourage employees to take advantage of training programs and other opportunities to qualify for advancement, and apply Corporate Equal Employment Opportunity Policy to assit in the attainment of company goals and objectives. Determine duties which make up a work assignment for individuals in group and the number to be classified on each job to do the available work economically. Review various records pertaining to the group, investigate areas where performance could be improved, and institute or recommend changes in methods and procedures, and other changes, to improve efficiency and reduce costs. Explain company policies and regulations to subordinates and recommend hire, promotion, transfer and other changes in status of employees. Establish standards and rate individual's performance. Enforce rules and regulations, recommending disciplinary action when warranted. Review and make prompt disposition of employees' grievances.

Investigate difficulties encountered in performing construction, renovation, shop rearrangements and maintenance work. Review findings with engineers, vendors' representatives, contractors and others as required and recommend changes in structural or mechanical selection or methods of doing the work to overcome difficulty. Keep informed of technical developments and determine the feasibility of adapting new ideas, methods, and techniques for use at Pratt & Whitney Aircraft. Compile data on benefits to be derived, the costs involved in implementing new methods or purchasing new equipment, draw conclusions and make recommendations in accordance with findings.

EXHIBIT R
JOB DESCRIPTION FOR THE
POSITION OF GENERAL FOREMAN, MAINTENANCE

Responsible for general supervision of a group of employees carrying out one or more duties including carpentry, millwright, pipefitting, painting, sheet metal fabrication and welding while engaged in construction or maintenance work on plant facilities.

Review projected activity schedules and work loads and keep foreman apprised of changes which affect their unit. Discuss with foreman manpower requirements to meet changing needs, and determine the number of men and type of skills required to do the work efficiently and in time to meet completion dates. Review status reports to make sure that work is progressing satisfactorily. Coordinate the work of the different trades with that of other groups on the shift, and with the efforts of the other shifts, to assure a smoothly operating department.

Institute procedures within the framework of existing policies to guide foreman in carrying out their responsibilities. Assist subordinates in solving problems such as in establishing uniform standards of performance for employees supervised and in solving unusual construction or maintenance problems encountered in their work. Review subordinates' recommendations for solving problems and determine what action should be taken. Establish goals, objectives and standards of performance for subordinates and rate and appraise individuals in accordance with manner in which they perform their work. Explain company policies and requlations to subordinates, and keep them apprised of any changes in administrative practices and procedures which affect their work. Apply the Corporate Equal Employment Opportunity Policy and implement effective affirmative action to assist in attainment of the goals and objectives of the facility. Recommend hire, promotion, transfer, and other changes in status of employees, and disciplinary action when warranted. Review and make prompt disposition of employees grievances.

Work with various groups to find solutions to a wide variety of problems connected with construction or maintenance work. Investigate technical difficulties encountered in performing work and determine best course of action to follow to avoid delays. Attend meetings at which proposed work programs are reviewed and discussed, determine if equipment, manpower and skills are available to handle the work, and exchange ideas on how best to coordinate the work of the different trades to do the work efficiently. Review work where estimated time required to do the work appears excessive, or design presents unusual construction or fabrication problems and contribute ideas on changes in design and methods in order to better utilize available equipment and manpower to keep costs to a minimum. Review various work reports and data pertaining to the performance of the group, investigate areas where improvements could be made to make group more effective, and institute or recommend changes in practices for greater efficiency.

EXHIBIT S
JOB DESCRIPTION FOR THE
POSITION OF MAINTENANCE MECHANIC
(GRADE 6)

Perform minor maintenance work on service systems, equipment and buildings, and assist in moving light weight equipment and furniture.

Work from drawings, service manuals and other similar information to perform the routine repair work and preventive maintenance checks involved in maintaining plumbing, heating and ventilating equipment, and industrial machinery such as sanitary facilities, exhaust fans, unit heaters and small pumps. Answer trouble calls where the symptoms are indicative of the cause and make repairs or replace the malfunctioning unit. Typical examples of the type of work performed include: lubricate bearings; adjust belt tension; replace faucet washers and packing; unplug sanitary sewers; and replace hoses on machines. Replace small threaded pipe and fittings including unions and valves to repair leaks and other problems in steam, water, air and other service lines. Overhaul equipment such as small single stage centrifugal pumps, exhaust blowers and check valves. Disassemble equipment, check condition of parts such as bearings, impellers, and seals, and refer questionable parts to other for decision. Rebuild the unit, make adjustments, and perform other work required to return it to proper working order.

Assist in rigging hoists or using small crane to get unit heaters, blowers, pumps and the like down from overhead or up out of pits. Operate small crane, forklift truck, crawler tractor and other similar equipment to assist in moving small machine tools, benches, tanks, surface plates and other equipment. Repair shop partitioning, bumpers and other wood-fabricated items used in the shop. Scrape, wire brush and wash surfaces in preparations for painting and apply ready mixed paints with brush, roller or pad, where the primary purpose is preservation.

Operate electrolyte treatment plant following established procedures to maintain proper solution strength and remove sludge. Make periodic checks such as pH and specific gravity and add materials as required to maintain proper balance and concentration of electrolyte. Mix filter material, prepare vacuum filter and circulate electrolyte through filter to remove sludge.

EXHIBIT T
JOB DESCRIPTION FOR THE POSITION OF MAINTENANCE MECHANIC (GRADE 4)

Perform general maintenance work on buildings and industrial equipment.

Work from drawings, service manuals and other similar information to perform all but the most complicated work associated with each of the trades involved to maintain plumbing and industrial machinery such as sanitary and pollution control facilities, furnaces, exhaust fans, pumps and other equipment associated with various areas including test, heat treat, welding and plating. Answer trouble calls, check equipment to determine the nature and extent of the trouble, and make repairs or replace the malfunctioning unit. Typical examples of the type of work performed include: replacing belts, pulleys and bearings; rebrick furnaces; replace igniters and pilot lights on gas fired equipment, changing engine mount hardware in test cells; alignment of shafts where limits are not close; changing filters and replacing valves and fittings. Repair leaks in steam, water, air and other service lines; replace threaded, fiber glass, plastic, copper, and other pipe; apply insulation to repaired sections, and replace damaged insulation; repair furnaces and box ovens; repair door operating mechanisms and hardware; replace fittings and short sections of duct in exhaust systems; and other similar work. Overhaul equipment such as pumps, hoists, chain falls, hydraulic and air cylinders and valves. Disassemble equipment, check condition of bearings, impellers, seats, hoist brakes and gears, and other parts, and determine whether to replace or recondition parts. Rebuild the unit, fit parts, make adjustments, and perform other work required to return it to proper working order. Perform preventive maintenance checks on the more complicated test associated equipment.

Rig hoists or use fork lift truck or small crane to get equipment such as blowers and pumps down from overhead or up out of pits. May occasionally operate crawler tractor to move items. Repair partitioning, bumpers, work platforms, furniture and other wood fabricated items. Replace ceiling and floor tile.

EXHIBIT U
JOB DESCRIPTION FOR THE
POSITION OF INDUSTRIAL WASTE ANALYST

Complete responsibility for an industrial waste record keeping system which maintains accurate and up-to-the-minute data on waste production and disposal, to be used for a variety of purposes, the foremost being to demonstrate Company compliance with local, State, and Federal industrial waste laws and regulations. Provide assistance to East Hartford and branch plant personnel in packaging, shipping, and disposing of hazardous waste.

A computerized record keeping system will be used with a CRT for entering, extracting, and changing data. Data pertaining to industrial waste treatment operations of all Pratt & Whitney Aircraft plants will be reviewed, investigated and corrected where necessary, and entered. Be responsible for a variety of paper work relating to industrial waste generation and treatment. This includes responsibility for an EPA Manifest System which involves distribution of up to seven copies of each Manifest within specific time intervals, re-calculating, correcting and explaining manifest discrepancies in writing on Manifest before sending the required copy to the State of Connecticut, and following up on the return of Manifest copies to PWA within the required time. Other paperwork includes review of interanl waste manifests, certificates of transfer, and internal and external certificates of disposal, for correct computer codes, mathematical computations, descriptions, etc, and make necessary corrections. Also review weekly, monthly and annual computer generated reports for accuracy and correct where necessary. Resolve all paperwork errors and recognize and report serious and/or recurring paperwork errors to superior. Train East Hartford and branch plant personnel in entering information on all required forms and certificates, maintain computer stored descriptive data to be used by East Hartford and branch plant personnel in completing forms, and assist these personnel in understanding and utilizing computer generated reports. Ensure that waste inventory on computer agrees with physical inventory.

Utilize CRT and computer generated reports to extract various information for immediate waste treatment decisions, quarterly reports, government required environmental reports, reports to Plant Engineering Accounting Group which form the basis for back-charging branch plants for waste disposal, and for paying State of Connecticut Hazardous Waste Tax, and various other reports as required. Work with personnel of Pratt & Whitney Aircraft Information Systems in correcting programming errors and creating newly required programs and reports.

Approve and co-ordinate waste shipments from branch plants to East Hartford and schedule transportation of the waste with Pratt & Whitney Aircraft Outside Trucking. Communicate with outside Waste Disposal Contractors to schedule pickup and disposal of waste from East Hartford and branch plants, and coordinate waste pickups with disposal contractors and waste treatment foreman. This requires understanding of vendor contracts and preparation of

Position of Industrial Waste Analyst (Cont'd)

Pratt & Whitney Aircraft shipping orders and different EPA Waste Manifests for the several states where disposal is accomplished, coordination of internal manifests with shipments, verification of receipt of completed EPA manifests, vendor certificate of disposal, and verification of vendor invoice against shipment and certificate of disposal.

Under guidance and with approval of Chemical Engineer, direct personnel regarding proper methods of packaging, labeling, and transporting of a variety of industrial waste, with special attention given to compatability of waste. Be familiar with DOT and EPA waste transport and disposal regulations. Review Federal Regulations and other material to extract information pertaining to inudstrial waste laws and regulations, and establish and maintain efficient filing system for such items as waste analyses, manifests and disposal certificates, and reference material on industrial waste laws and regulations.

US EPA New England
RCRA Document Management System
Image Target Sheet

RDMS Document ID # 2451

Facility Name: PRATT & WHITNEY - MAIN STREET

Facility ID#: CTD990672081

Phase Classification: R-1B

Purpose of Target Sheet:

[X] Oversized (in Site File) **[ ] Oversized (in Map Drawer)**

[ ] Page(s) Missing (Please Specify Below)

[ ] Privileged **[ ] Other (Provide Purpose Below)**

Description of Oversized Material, if applicable:

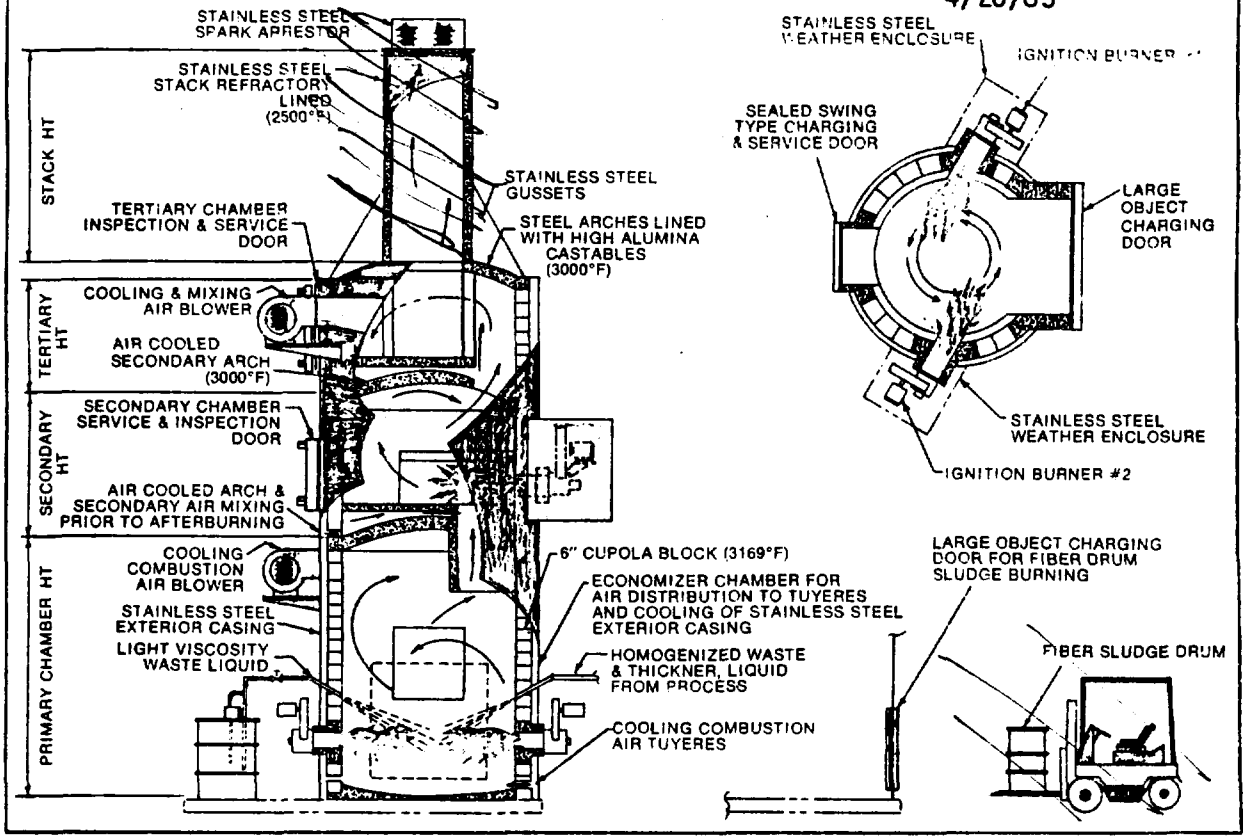
EXHIBIT V: DRAWING PE-MC-891-E: C\VTP PIPING SCHEMATIC

[ ] Map **[ ] Photograph** **[X] Other (Specify Below)**

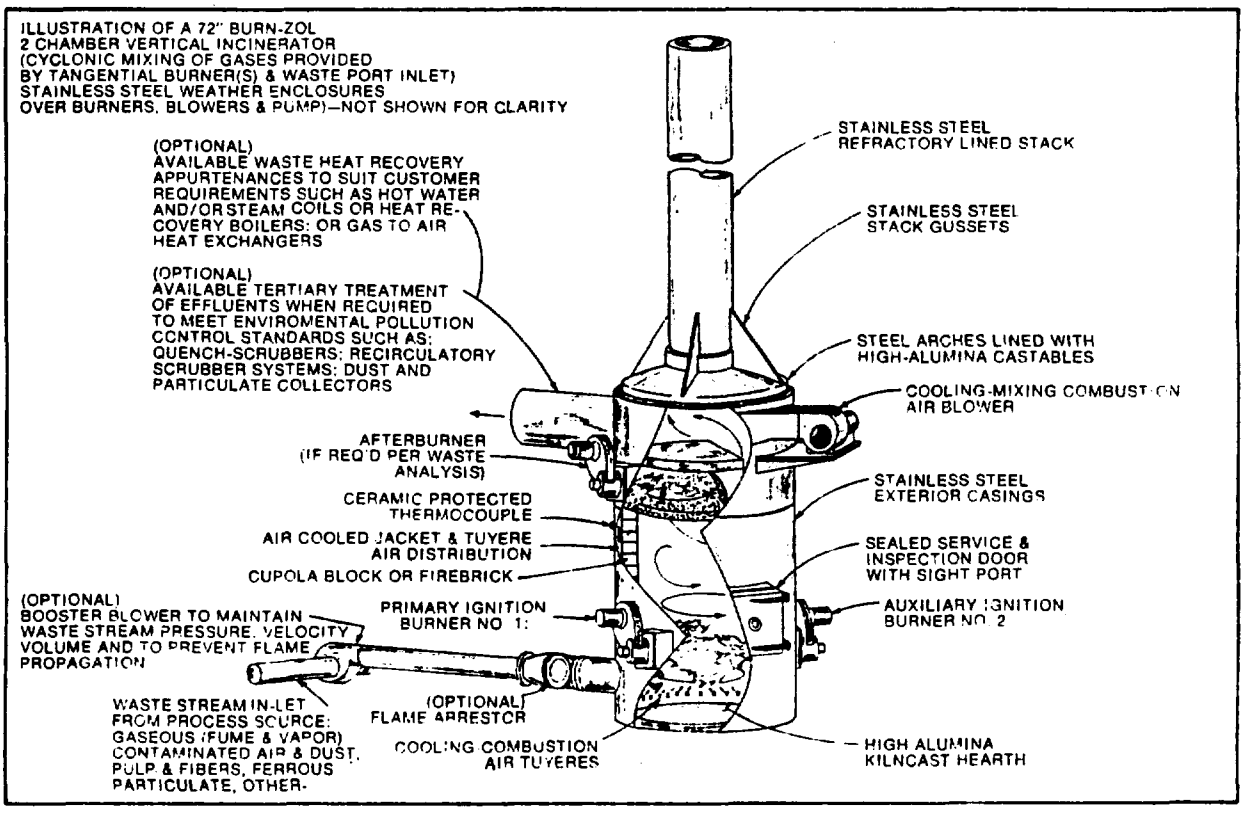
FLOW CHART

*** Please Contact the EPA New England RCRA Records Center to View This Document ***

4/20/83



LIQUID WASTE AND SLUDGE INCINERATOR SYSTEMS



VAPOR AND GASEOUS WASTE INCINERATOR

BURN INCINERATOR SPECIFICATIONS

GENERAL:
The incinerator shall be a patented vertical self-supporting unit suitable for charging through the wall if required, and designed to withstand 100 m.p.h. winds. The incinerator and stack external casings, charging hopper-chute and enclosure, burners, and motor enclosures, shall be constructed of stainless steel for weather protection and maintenance-free operation. The outer shell of the incinerator shall be entirely air-cooled. All motors shall be rated at 50, 60 Hertz (Voltage as available) and have fuse protection and shall be controlled by magnetic starter for operation of the proper electric service.

CHAMBER CLASSIFICATIONS & FUNCTIONS:
Primary: The primary combustion chamber, for partial burning and conversion of combustible material to gases.
Secondary: A secondary combustion chamber for complete gas and particle combustion where the primary effluent shall be thoroughly mixed with warm fresh air and then pass through the secondary flame envelope and sweep around and upward through this temperature controlled chamber to the next.
Tertiary: The third chamber will receive the hot effluent from the second stage where warm fresh air will again be introduced and thoroughly mixed in this chamber by means of baffles or deflectors which cause this chamber to act in a manner resembling a cyclone separator, then the effluent is discharged to the refractory lined stack. The incinerator combustion chambers and mixing ports shall provide appropriate volumes and velocities to maintain a gas and particle retention time of two seconds, minimum.

CASING CONSTRUCTION:
Incinerator steel casings shall be double-wall construction, having a minimum 14 GA stainless steel (type 409) outer casing and a minimum 11 GA carbon steel inner casing.

Double-wall construction shall be adequately sealed to form a forced air distribution jacket for external skin cooling and pretempered combustion air to tuyeres and secondary mixing ports. The overall design shall minimize thermal stresses. The casings shall be structurally reinforced and designed to adequately support the burners, blowers, stack, refractories, all other components and the entire unit will be self-supporting.

ANCHORS:
The anchors shall be formed from appropriate alloy steel to withstand temperatures encountered, and of sufficient strength to support the refractory with a safety factor of 4, based on the elastic limit of temperatures encountered.

REFRACTORY & CASTABLES:
The refractory shall be 3200° F. cupola block firebrick with 3000 high alumina castables refractory around the charging door, cleanout doors, burner and blower ports. The hearth, air-cooled chamber arches, and tunnels will be monolithic castings of 3000° F. high strength refractory in accord with the specifications. The refractory shall be not less than 6" thick in the combustion zones. The breeching stack lining shall be not less than 3" thick of insulated castable refractory 3000° F. temperature rating.

SWING TYPE CHARGING DOOR:
Door and frame shall be fabricated from 11 GA thick minimum stainless steel plate and shall be lined with high alumina castable refractory. Door latch shall be a crank-screw design to provide a positive seal when tightened. Door closures shall be gasketed with high temperature resistant-woven asbestos.

PRIMARY COMBUSTION CHAMBER:
1. The primary combustion chamber shall be sized to easily accommodate the hourly combustion rate. All openings will be so located and constructed to prevent gases or liquids from leaking out.
2. Combustion air orifices (tuyeres) shall supply controlled air volumes and pressures from the forced air blower which incorporates modulating dampers. Operating pressures and location of the tuyeres shall prevent waste materials from lodging in areas where they will not be consumed during the burning process.

CHARGING HOPPER:
The charging hopper-chute (optional) shall be fabricated of stainless steel and capable of holding solid, semi-solid and liquid waste in an integral manner that prevents contact of the waste on other charging mechanisms. The hopper-chute shall have provisions for a water and disinfectant spray to function automatically during each charge cycle, thus providing a sanitary disposal system.

The charging door shall consist of an inner fire door (refractory lined), a powered hopper-chute of stainless steel, and an outer door which are mechanically interlocked in such a manner that the primary combustion chamber is sealed from the ambient air by the inner fire door while the outer door is open. The inner door shall open only after the outer door is closed. The door closures shall effect a seal of sufficient integrity to assure that no gases pervade the ambient air.

The combustion chamber shall operate at a negative air pressure when the inner fire door is opened to prevent injury to the hopper-chute, or operator, and to prevent the escape of gases. The fire door shall be lined as before mentioned and this door and all other door closures of the incinerator shall be gasketed with high temperature resistant-woven asbestos. The temperature of the door handles shall be low enough to permit the operator to open the door without gloves or other protective devices.

RAM CHARGER:
The ram charger shall be fabricated from steel plate with structural steel reinforcement to adequately support integral hydraulic system and additional loading from charged waste.

Optional stainless steel may be provided in wetted areas with provisions for a water and disinfectant spray to function automatically during each charge cycle, thus providing a sanitary disposal system.

The ram charger shall be equipped with a hydraulic operated loading door to seal ram hopper after each loading and a sealed guillotine firedoor lined with high alumina castable refractory.

Optional steel cart(s) and cart loading mechanism may be provided to facilitate waste handling from remote areas into ram hopper.

Automatic charge cycle shall commence on a single push button actuation. Interlocks shall be provided to allow primary burners to modulate to low fire and combustion air dampers to close to decreases excess air into primary chambers. Hopper loading door shall close and the incinerator firedoor shall open. The charging ram shall advance the load into the incinerator and then automatically reverse. When the ram head clears the incinerator door it shall stop while the firedoor closes and then fully retracts as the hopper loading door opens. Should its charging cycle not be completed within the allotted time, the ram shall fully retract and an audible alarm shall be sounded. Upon completion of charge cycle, primary burners and controlled air resume normal operation.

Two fully modulating oil or gas fired burners with a turn-down ratio of 20 to 1 shall be provided in the primary combustion chamber. The burners shall provide primary heat at start-up and at all times when the temperature in this chamber falls below preset levels. Burners shall be so located that the flame is directed tangentially to the inner chamber wall, complementing each other so as to cause a swirling action of the gases, while impinging on the waste material as directly as possible. The burners shall be electrically ignited with a gas pilot and regulated by a set point controller adjustable from 0° to 2500° F. in increments of not greater than 100° F. The controller shall be activated by a thermocouple located in the upper one-third of the combustion chamber. Burner controls shall incorporate FM approved components where applicable and the entire fuel train shall be designed in accord with IRI recommended practice for oil-fired furnaces, including ultraviolet flame scanners for flame failure safety shutoff for the burners and pilots and preignition purging control.

LIQUID WASTE INJECTION SYSTEMS:

The primary combustion chamber shall be equipped with air-cooled nozzle located in the proper position for liquid waste injection. This adapter shall provide for disassembly and removal of stainless steel nozzle (externally of the chamber) and have the ability to interchange nozzle sizes to accommodate various liquid characteristics.

SECONDARY COMBUSTION CHAMBER:

The secondary combustion chamber shall be provided with an electrically ignited gas pilot, oil fired burner designed to maintain a continuous minimum temperature of 1800° F. The burner shall be regulated by a set-point indicator controller adjustable from 0° F. to 2500° F. The indicator shall be capable of indicating temperatures to 2500° F. with graduations on the scale not greater than 100° F. The controller shall be activated by a thermocouple located in the upper one-third of the chamber. This burner shall have the same turn-down ratio, FM or IRI approved components and fuel train and safety systems as the primary combustion chamber burners.

TERTIARY CHAMBER:

The stack breechway shall extend down into the tertiary chamber and rest on the arch-hearth. The chamber shall be so designed that the secondary chamber effluent will discharge into the periphery of this chamber and be caused to swirl around the chamber by means of baffles or deflectors before exhausting into the stack breechway which shall be at axis of the chamber.

INSPECTION-SERVICE DOORS:

Each chamber shall be provided with inspection-service doors which are accessibly located and permit the complete removal of residue waste material and personnel entry for inspection. Doors and frames shall be fabricated from stainless steel plate of approved thickness and shall be lined with the same refractory as the combustion chambers. Door closures shall be gasketed with high temperature resistant-woven asbestos.

CONTROL PANEL:

1. The control panel shall be in a weather and dust-proof stainless steel enclosure which is remotely located and mounted on a wall in the charging room adjacent to the charging door.
2. A weather and dust-proof stainless steel terminal junction enclosure shall be mounted on the incinerator and prewired to the various components of the unit.
3. The control panel and terminal box shall be wired with color coded or numbered conductors for identification to aid in circuit identification. Burn-Zol will provide a circuit schematic showing all electrical components and their connections.
4. The control panel shall include but is not limited to the following components:
   a. Three (3) magnetic starters for burner blower motors.
      Two (2) magnetic starters for forced air blower motors.
      One (1) magnetic starter for hydraulic power pak.
      Three (3) flame supervisory relays for burners.
      Two (2) temperature controllers (0°-2500° F.) (chromel-alumel) potentiometric with second limit set point.
      Two (2) Line voltage/24-V transformers for modulating motors.
      Solid state control relays and timers.
      Audible alarm horn, indicating lights, control switches and meters.

STACK SAMPLING FACILITIES: OPTIONAL

1. Two stainless steel stack sampling ports shall be provided at eight to ten stack ID's above the breechway port and 90° apart from each other. These sampling ports shall be 3" I.D. mounted flush to the interior surface of the stack with standard pipe flanges on the outside provided with cover plates.
2. OSHA approved ladder, cage and platform shall be provided, fabricated of stainless steel with an aluminum grating on the platform. The platform shall be capable of supporting three people and 200 lbs. of equipment and be about three-feet wide. The ladder well should not be located under or between the sampling ports. The ports shall be between 4 and 5 feet above the platform grating.
3. A 115-V, AC, 20 amp weatherproof outlet shall be provided not less than eight inches above the platform grating.

CERTIFICATION REQUIREMENTS:

A. Burn-Zol shall submit a certified copy of a laboratory test giving evidence that the incinerator is capable of destroying bacterial spores.
B. Burn-Zol does certify that the incinerator shall reduce Type 0 through 4 waste by a minimum of 95% after four hours of being charged at rated capacity and normal operation.

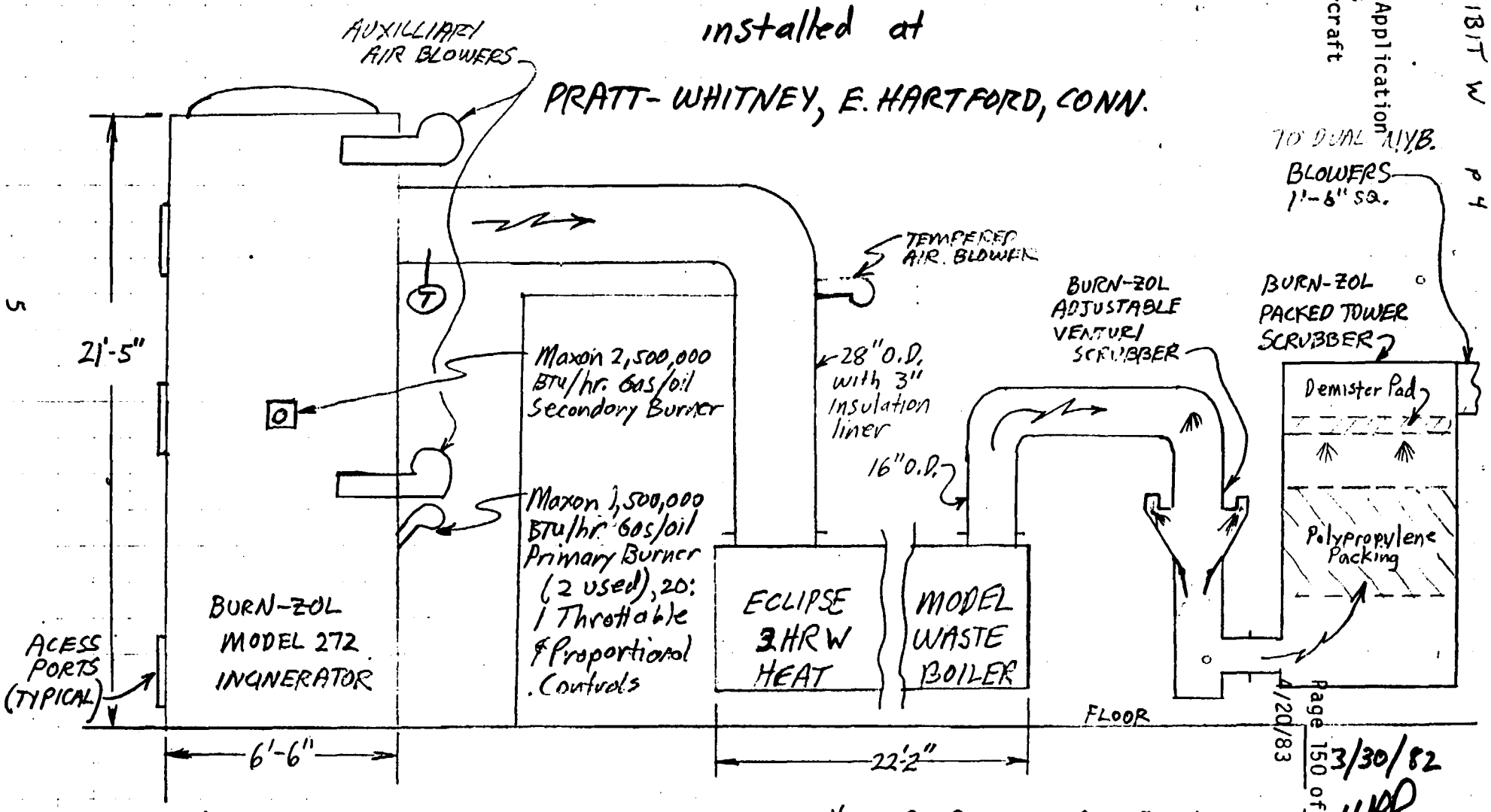
DEMONSTRATION AND INSTRUCTIONS:

A. Burn-Zol shall start up and operate the completed installation demonstrating that all systems are in proper operating condition as approved. A complete cycle shall be demonstrated using waste provided.
B. Burn-Zol shall provide three (3) sets of operating instructions and Manuals as well as a minimum of four hours operating instructions to equipment operators.

HAZARDOUS WASTE INCINERATION SYSTEM

installed at

PRATT-WHITNEY, E. HARTFORD, CONN.



NOTE: A 1,200 ACFM COMBUSTION AIR BLOWER FEEDS THE 3 INCINERATOR BURNERS.

NOTE: SEE FOLLOWING PAGE FOR MORE INFO

(T) TEMP. SENSOR FOR RECORDER

4/20/83

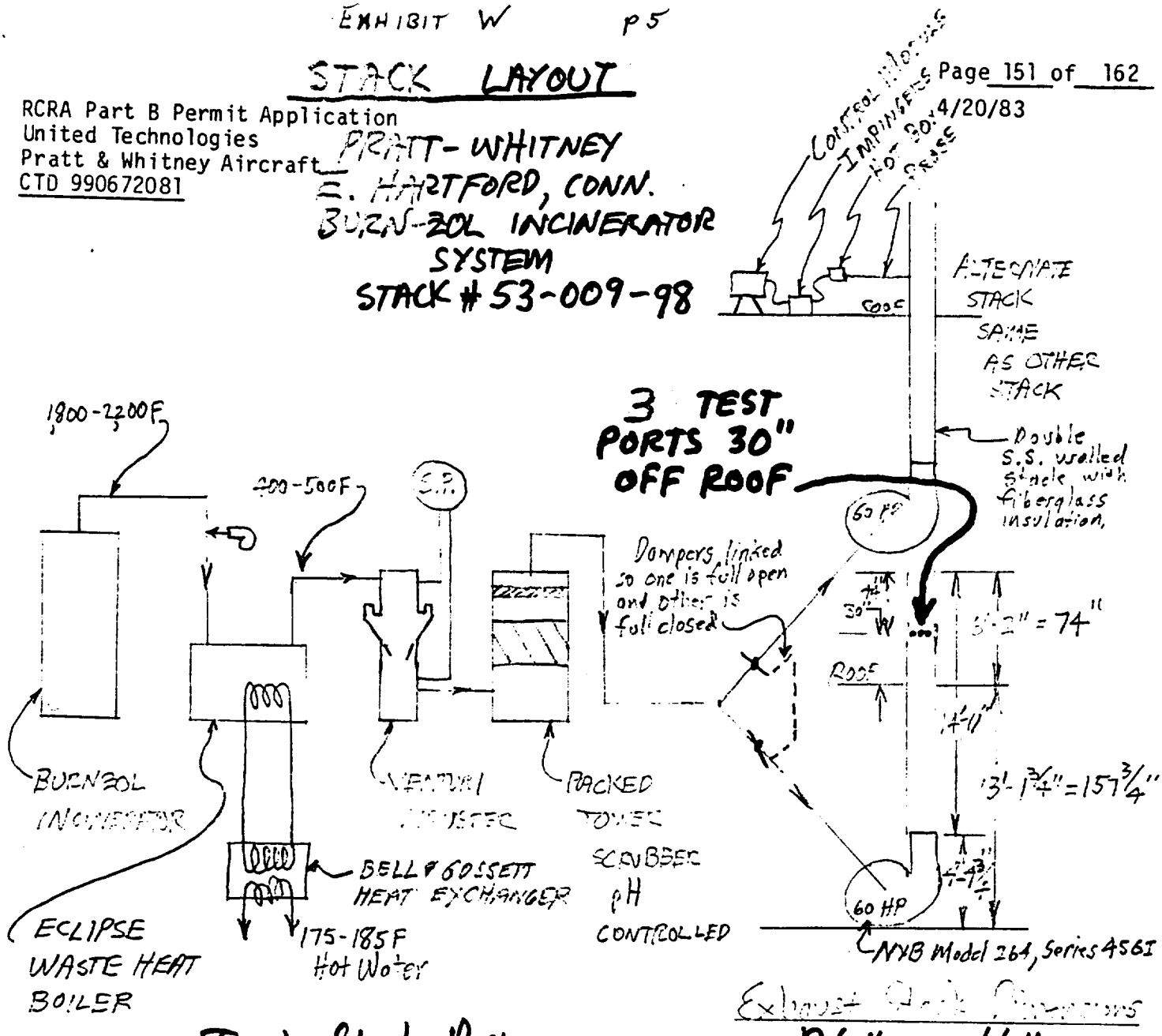
3/30/82 WBR

STACK LAYOUT

RCRA Part B Permit Application
United Technologies
Pratt & Whitney Aircraft
CTD 990672081

PRATT-WHITNEY
E. HARTFORD, CONN.
BURN-20L INCINERATOR SYSTEM
STACK # 53-009-98

4/20/83



Exhaust Duct Dimensions

$11\frac{13}{16}" \times 14\frac{1}{2}"$

$11.81 \times 14.5 = 171.2 \square"$

$1.19 \square'$

Equival. Dia. $= \frac{2LW}{L+W}$

$= \frac{2 \times 14.5 \times 11.81}{14.5 + 11.81} = 13.0"$

Total Stack Distance

14'-11" = 179"

179/13 = 13.8 Equiv. Dias.

1) Upstream Distance

Actual Equival. Dia.

$12'\text{-}5\frac{11}{13}" = 149/13 = 11.5$ Equiv. Dia.

2) Downstream Distance

Actual Equival. Dia.

30"/13" = 2.3 Equiv. Dia.

SKETCH # 204
Rev. C Rev. A
Rev. B

WBR 8/28/81

Job # 14719 **ROSSNAGEL & ASSOCIATES** Date 12/14/82

Job Name Pratt-Whitney Hartford Conn

Made by HF

Checked by WBR

Engineering & Testing Consultants
Air - Water - Noise
234 Rt. 70 • Medford, N.J. 08055

EXHIBIT X

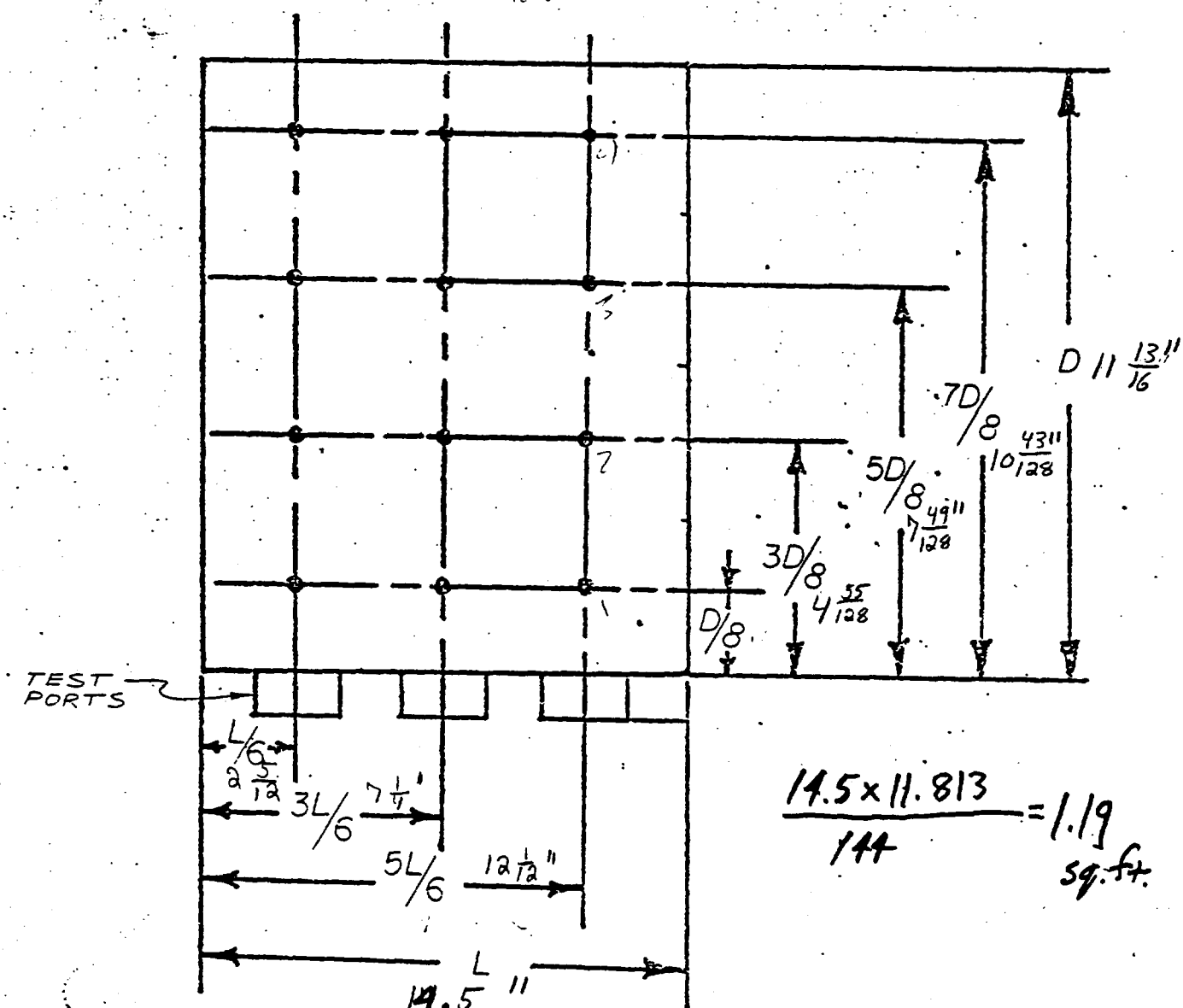
Description EQUAL AREA CALCULATION 4/20/83

RECTANGULAR DUCT >2 sq. ft. = 12 points

RCRA Part B Permit Application
United Technologies
Pratt & Whitney Aircraft
CTD 990672081

LIQUID WASTE INCINERATOR STACK

L/6	3L/6	5L/6	L	–
$2\frac{5}{12}$"	$7\frac{1}{4}$"	$12\frac{1}{12}$"	$14\frac{1}{2}$"	–
D/8	3D/8	5D/8	7D/8	D
$1\frac{61}{128}$"	$4\frac{55}{128}$"	$7\frac{49}{128}$"	$10\frac{43}{128}$"	$11\frac{13}{16}$"
1.48	4.4	7.38	10.33	11.8



$$\frac{14.5 \times 11.813}{144} = 1.19 \text{ sq. ft.}$$

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South Euclid, Ohio
(216) 777-5500

Mid-Atlantic Division
1217 Central Avenue
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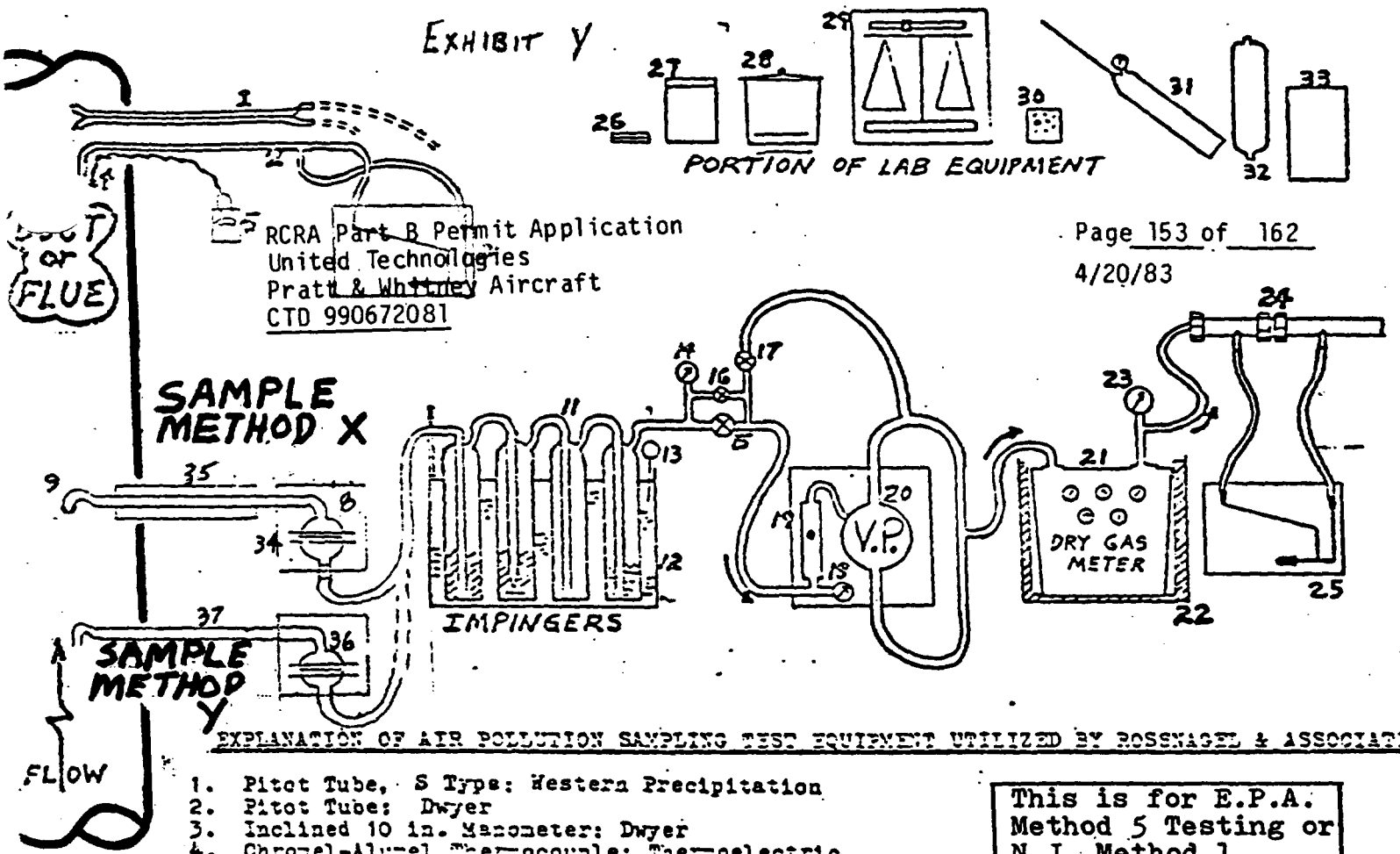
(704) 333-8411

Southeastern Division
250 Arizona Avenue N. E.
Atlanta, Georgia 30307
(404) 377-4248

EXHIBIT Y



EXPLANATION OF AIR POLLUTION SAMPLING TEST EQUIPMENT UTILIZED BY ROSSNAGEL & ASSOCIATE

This is for E.P.A. Method 5 Testing or N.J. Method 1

1. Pitot Tube, S Type: Western Precipitation
2. Pitot Tube: Dwyer
3. Inclined 10 in. Manometer: Dwyer
4. Chromel-Alumel Thermocouple: Thermoelectric
5. Bridge Type Temperature Indicator: Thermoelectric

6. Nozzle - various sizes: Gelman
7. Nozzle Holder: Rossnagel & Associates or Western Precipitation
8. Membrane Filter Holder: Gelman
9. Nozzle: Western Precipitation
10. Alundum Thimble Holder: Western Precipitation

11. Impingers, GREENBURG-Smith Type and other special types: Ace Glass or Gelman
12. Chilled Water Impinger Holder and Travel Case: Rossnagel & Associates
13. Chilled Water Thermometer: Weston
14. Vacuum Gauge: U. S. Gauge
15. Globe Valve - coarse adjustment

16. Needle Valve - fine adjustment: Whitey
17. By-pass Globe Valve
18. Vacuum Gauge: Gelman
19. Approximation Flow Meter: Gelman
20. Vacuum Pump: THOMAS

21. Dry Gas Meter: Rockford, Sprague
22. Insulated Dry Gas Meter Holder and Travel Case: Rossnagel & Associates
23. Gas Meter Thermometer: Weston
24. Orifice Disc Meter: Rossnagel & Associates
25. Manometer, 12-C-12 inches or inclined 10 in. type: Dwyer

26. Filter Carriers: Ellisco Inc.
27. Thimble Carriers: Ellisco Inc.
28. Desiccator: Arthur H. Thomas Co.
29. Analytical Balance - to .0001 grams: Fisher Scientific
30. Analytical Balance Weights: Fisher Scientific

31. Sample Bottles - 1 Liter with Vacuum Gauge
32. Integrated Gas Sample Collector:
33. Gas Analysis Test Unit: Bacharach
34. HEATER: BOX FOR CYCLONE AND FILTER HOLDER: ROSSNAGEL & ASSOCIATES
35. PROBE - GLASS LINED OR STAINLESS (WATER COOLED) FOR HIGH TEMP.
36. FILTER HOLDER: ACE GLASS
37. PROBE - ALL GLASS FOR SPECIAL APPLICATIONS

ROSSNAGEL & ASSOCIATES
234 ROUTE 70
MEDFORD, NEW JERSEY 08055
PHONE (609) 654-1441

EXHIBIT Z

ISOKINETIC STACK TESTING CHECKLIST

ROSSNAGEL & ASSOCIATES
Engineering & Testing Consultants
Air - Water - Noise
234 Rt. 70 • Medford, N.J. 08055

RCRA Part B Permit Application
United Technologies
Pratt & Whitney Aircraft
CTD 99067208I

4/20/83

A. PRELIMINARY SURVEY AND PRETEST:

1. Determine if upstream and downstream (simultaneous efficiency tests) or only downstream tests are required. What does Purchase Order and/or state application specify? Get copy of state/city application for installation to confirm test requirements.
2. Contact responsible operating personnel at test location.
3. Make survey of site:
   a. Determine location and size of test ports per RA Dwg. #A-0075C.
   b. Will staging be required? Will ports handle standard 3" NPT probe holder? Is E.P.A. train required? If not, what type train? Is wet catch required?
   c. Measure inside dimensions of breech, duct, stack or flue.
   d. Is adequate shop air available if aspirator is to be used?
   e. Is line voltage at site adequate under required load?
   f. Will temperature be too severe for test personnel at sample port at maximum operating conditions? What is maximum sampling temperature? Are radiation shields or asbestos suits required? Are wind screens required? Are any hazardous chemicals being emitted? If so, are special respirators needed?
   g. Will on-site personnel conduct all process loading and operation? Is sufficient and proper on-site refuse available in an incinerator test?
   h. Is a two way communication system required?
   i. Check effects from charging incinerator (temp., flow, smoke, etc.).
   j. On incinerator tests are firebox and secondary temperature indicating equipment available? When were they last calibrated?
   k. Determine if Sampling Method X, Y, Z or a special method will be used per applicable RA series of Form #20's.
   l. Is it safe to leave equipment overnight i.e. high temperature, wind, rain, vandalism or unusual operations?
   m. Is the roof flat enough for sampling train? If not, what can be done? What ladders, scaffolding, railings, etc. are required?
   n. Find out how the test equip. can best be raised to the testing point from the nearest safe parking place. Is a pulley or block & tackle req'd? Estimate time to raise equipment.
   o. Estimate equipment setup and travel time. Determine whether it is feasible to stay overnight?
   p. Take Polaroid photograph of test site if permitted for future reference.
4. Conduct preliminary velocity and temperature traverse. Fill out RA Form #15. Record time, calibration factor and type of pitot tube used. Take Wet Bulb & Dry Bulb check if exhaust is under 400 F.
5. Make Ringelmann/Opacity check (if applicable). Fill out either proper RA Form #17 or #17-0.
6. Determine exact manufacturing and model number of auxiliary equipment being used, such as:
   a. Auxiliary burners (primary, secondary, afterburners, etc.).
   b. Under fire fans? Over fire fans? In fire air blast?
   c. By-pass dampers? Inlet dampers? Static indicators? Temperature limits? Ozone or oxidizing adders?
   d. Is there a separate gas meter for gas burners on incinerator tests?
   e. Scrubbers, dust collectors, electrostatic precipitators, etc.
7. Make basic scaled sketch (with dimensions) of furnace, combustion chamber, vent, hoods, flue, scrubbers, incinerator, inlet and outlets, sampling downstream & upstream distances.
8. Determine height of stack above ground and distance to nearest property line.
9. Notify by phone call applicable government agency personnel of date and details if an Official Test. Confirm with letter and applicable distribution of copies to customer.
10. Check to see all needed supplies are in the test van; such as spare glass parts, sample jars, evacuated cylinders, Orsat, Bacharach, velometer, tachometer and low velocity electronic micromanometer. Use Van Checklist to assure all equipment is ready-to-use.
11. Would it help to pre-label sample jars and put the measured scrubbing agents in jars?
12. Put in writing any special test needs or potential problems such as state test forms needed, calibration data needed, list of tare weighed filters, minimum sampling volume, etc.
13. Make sure on-site gas meter, orifice, pitot, etc. have been properly calibrated and the attached tags reflect it.

B. LAB PREPARATION:

1. Identify, log and dry thimble/filters in oven (at 215 F. for 3 hours) and desiccate thimbles and filters for at least 24 hours before weighing. Follow special procedures on paper thimbles. Take tare weight of filters (to .0001 grams) on analytical balance. Keep weighed reference in desiccator. Record weights on RA Form #26.
2. Weigh drierite (or equivalent) drying agent for impinger train the day before the test. Store drierite in air tight containers.
3. What other special lab equipment or absorbing solutions are required for the test? During winter months do not leave solutions or liquid samples in test van outdoors overnight.

C. ON DAY OF AN OFFICIAL TEST:

1. Start Events Log Sheet on RA Form #28 upon arrival and then contact operating personnel at test location.
2. Carefully unload and set up equipment unless this is done the day before test. Be sure all ladders and any wind screens are properly secured.
3. Lay out exact probe entry dimension for each sampling point (as related to outer end of test port) per EPA requirements.
4. Mark and/or wire penetration distance on simultaneous reading pitot tube and sample probe. Allow for port, holder, etc. Fasten pitot to probe wherever possible. Mark pitot in relation to probe in order to detect any relative movement between them. When not possible to strap pitot to probe, then take readings at another known reference point in other test port.
5. Make velocity and temperature traverses. Record data on RA Form #15. In turbulent flow check attitude of pitot tube, both rotationally and longitudinally. Also note the type of pitot tube used (i.e. standard or special) on the RA Form #15. Always record time of traverse and process conditions.
6. Record wet and dry bulb readings of stack (up to 400 F.), atmosphere and process inlet air(when req'd). Calculate moisture % by volume per Form #55. Measure P_g, P_m & T_m. Record on Form #16.
7. Calculate flow and then nozzle size to give optimum (near 3/4 cfm.) sampling rate using Fig. 8 and 9 of E.P.A. testing procedure (which is printed on back of ROSSNAGEL & ASSOCIATES' Nomograph Model 81). Measure exact diameter of nozzle with micrometer or vernier caliper and record on Form 16.
8. Verify operating characteristics of equipment and/or process under test: max. or min. temperatures, rate (continuous or batch), input materials, charging cycle of incinerator, chemicals, solvents, etc. Get this information in writing and have it signed by a responsible plant authority.
9. Obtain barometric pressure reading for each run where possible.

10. Install filters from covered containers into filter holders - do not connect filter holder yet. Record filter S/N on RA Form #16.
11. Turn on vacuum pump and allow to warm up at least 15 minutes with bypass valve open.
12. Set up impinger contents as required. ADD ICE FOR CHILLED WATER. Do not connect into sample train yet. Be sure water is added to obtain greater surface area contact on impingers.
13. Connect filter(s) and impingers into train.
14. Make a leak check on sample train up to the nozzle with 15 inches H_g vacuum at V_2 on the pump. The ΔH across the calibrated orifice in RA Form #20 schematic shall be $< .01$ inches W.G. On E.P.A. tests leakage to be $< .02$ cu. ft. in 60 seconds @15"H_g. On L.A. Air Pollution Control District test system to hold 25 inches H_g (with pump off) for 3 minutes without losing more than 1 inch H_g. Release blockage at inlet end before opening bypass valve or shutting off pump. Remember to read V_m after shutting pump off.
15. Last thing before beginning run verify process is operating and process log is being maintained. Check process during test run.
16. When ready to begin test run, have No. 3 Tester put probe and nozzle in stack at first sample point along with velocity/temperature sensors. At signal from No. 3 Tester that he is in position, start pump and stop watch. Record actual time on log sheet. Adjust for isokinetic conditions. Note stack temperatures, time, pitot readings, orifice adjustment and meter temperature on proper forms.
17. At start of run take complete Ringelmann/Opacity readings on RA Form #17 or 17-0 as required by authorities. Record odors, etc. on RA Form #16. Shutdown pump when changing test ports.
18. The basic test team responsibilities are as follows:
    No.1 Tester (team leader) is responsible for all aspects of test, the team members proficiency and following this checklist. This includes total supervision, proper starting and ending of run plus determination and maintenance of isokinetics and all data. He is to make and record Opacity/Ringelmann observations and leak test. Obtain process information. He is to personally check process.
    No.2 Tester is primarily responsible for proper positioning of probe and adjustment. Communicate probe movements to No. 3 Tester to required isokinetics. He is also responsible for and is to assist No. 3 man as required. He too will maintain a periodic visual emissions check. He will watch instruments for indications of filter clogging or breakage, sticking V_m, leakage, etc. He is responsible for Orsat, Bacharach, evacuated cylinders or other special checks.
    No.3 Tester is stationed at test ports. He will move the probe to the correct sample point per the instructions of the No. 2 Tester. He will communicate loud and clear the time of the point change and the V_p reading immediately upon completion of the change. He will also maintain the stack temperature log and take W.B./D.B. readings, communicating them to the No. 2 Tester. He is responsible for assuring sample point change timing, odor and visual emissions checks.
19. Both the No. 1 & 2 Testers are responsible for communicating test point changes to No. 3 Tester. Insist on a reply when probe is in position.
20. Using ROSSNAGEL & ASSOCIATES' E.P.A. nomograph, correct sampling rate if moisture, temperature or velocity pressure conditions change more than 4%, 100 F. or .02 inches W.G. respectively.
21. Take integrated plus spot CO_2/CO samples in any combustion test as required for Bacharach, Orsat or Gas Chromatography analysis. CO_2 samples must be taken upstream of scrubber.
22. At completion of run, first shut down pump and take probe out of stack stream. Next read V_m and then reconduct the leak test. Be sure to slowly release vacuum in proper direction after leak check. Pour all liquid in hose into Impinger #1. Then flush hose as required (if E.P.A. test, follow E.P.A. procedures) plus inlet nozzle, hose, filter holder and collect residue in separate marked containers. Use bottle brush or rubber policeman to loosen adhering particulates.
23. Measure and record liquid volumes in every impinger on RA Form #54. Condensate collection is critical for a "moisture balance" check on any combustion process. Pour impinger contents into separate marked all glass containers. Keep #1 impinger separate for pH check. Use pHydrion paper if condensate is too small to collect. Do not mix flushes with original impinger collection in EPA Method 5 test.
24. Pour contents of preweighed drying agent from impinger into container to be weighed in lab (if required). Use rubber policeman as necessary. Seal containers with tape.
25. Carefully put filters and thimbles in proper closed protected and identified containers. Handle filter containers carefully to avoid tipping. Place in holders in test van.
26. Calculate isokinetics for first run to determine if sampling was within the required $\pm$ 10%. If not, find error and reset nomograph.
27. Repeat C-5 through C-25 for each run made. Make three one hour runs or as otherwise specified. Two states allow one run Official Tests.

D. POST TEST LAB WORK (If an E.P.A. Test, follow special E.P.A. procedures):

1. Test team to submit all samples to lab with any special instructions plus responsibility in writing.
2. Transfer liquid samples to beakers for subsequent evaporation. Use a rubber policeman to facilitate the transfer of any adhering particles. For extremely difficult to remove residues use preweighed Gelman Type A glass fiber filters to wipe out the material.
3. Dry all filters and thimbles at 215 F. for three hours. Desiccate, cool and weigh to a constant reading. Follow separate procedure on paper thimbles.
4. Determine micron size of sample or residue when required per separate procedure.
5. Desiccate all filters and thimbles at least 24 hours. Record final weight on ROSSNAGEL & ASSOCIATES Form #26.
6. Label filters and thimbles for permanent record. Save for one year.
7. Passivate probe, nozzle, thimble holder and clean any other equipment (such as impingers required) after this test. Restock equipment in test van.
8. Weigh silica gel to .1 gms. and report promptly to calculation section. Also do Orsat analysis so that velocity calculations and isokinetics may be calculated.
9. Do Orsat Analysis and silica gel weights within 48 hrs. as they are first data items needed by calculation group.

Written by: W.B. Rossnagel, P.E., President

Form #RA-27I

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(603) 632-7567

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1217 Central Avenue
Charlotte, N. C. 28204
(704) 333-8411

ROSSNAGEL & ASSOCIATES INC.
Engineering & Testing Consultants
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MEDFORD, N. J. 08055
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Southeastern Division
250 Arizona Avenue
Atlanta, Georgia
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AIR - WATER - ENERGY - INDUSTRIAL HYGIENE - NOISE - WASTE

- STACK & EXHAUST TESTING
- DESIGN OF AIR/WATER/NOISE POLLUTION CONTROL SYSTEMS
- BACTERIA & LIMNOLOGY STUDIES
- SPECIFICATIONS / DRAWINGS
- WATER / WASTE WATER / BIOASSAYS
- CHEMICAL ANALYSES
- GAS CHROMATOGRAPHY, I.R.
- ENVIRONMENTAL IMPACT STUDIES

PROCEDURE #110E
8/21/75

PROCEDURE FOR NO_x SAMPLING

1. Remove rubber stopper from sample flask. Insert flask valve stopper into flask.
2. Assemble sampling train as per Dwg. #A-0118.
3. Put flask valve in "purge" position.
4. Place glass probe at sampling point.
5. Turn the flask valve and pump valve to "evacuate" positions.
6. Evacuate the flask to at least 27 inches of mercury vacuum (to within 3 inches mercury absolute).
7. Turn pump valve to "vent" position.
8. Turn off pump.
9. Allow to sit for one minute and observe manometer to see if there are any leaks (changes in reading).
10. Record the initial volume, temperature and barometric pressure.
11. Turn flask valve to "purge" position. Turn pump valve to "purge" position.
12. Purge the probe and vacuum tube using the pump (1 min.) or optional squeeze bulb (20 times) depending on the length of probe and sample line.
    NOTE: If any condensation occurs in the probe, it must be heated until condensation disappears, or purged for a longer time.
13. Turn pump valve to "vent" position.
14. Turn flask valve to "sample" position.
15. Allow 15 seconds then turn flask valve to "purge".
16. Disconnect flask from sampling train and swirl for 5 minutes.
17. Let stand for at least 16 hours with occasional swirling.
18. Do not remove stopcock until 16 hours have passed and final vacuum is measured.

19. To measure final vacuum, connect the flask to a mercury filled U-tube manometer, open the valve from the flask to the manometer and record the flask pressure and temperature along with the barometric pressure. (Record P_B for both day of test plus day of analysis.)

20. Transfer the flask contents to a container for shipment or to a 250 ml beaker for analysis.

21. Rinse the flask with two portions of distilled water (about 10 ml) and add rinse water to the sample.

22. For a blank use 25 ml of absorbing solution and the same volume of distilled water as used in rinsing the flask.

23. Prior to shipping or analysis, add NaOH (in) dropwise into both the sample and the blank until alkaline to litmus paper (about 35-40 drops).

ANALYSIS

24. If the sample has been shipped in a container, transfer the contents to a 250 ml beaker using a small amount of distilled water.

25. Evaporate the solution to dryness on a steam bath and then cool.
    NOTE: The bulk of the sample can be heated down on a hot plate to a volume of about 5-10 ml and then placed on the steam water bath and heated to dryness--this step will decrease sample analysis time.

26. Add 2 ml phenoldisulfonic acid solution to the dried residue and triturate* thoroughly with a glass rod.

    * You must wet all of the dried residue with the acid. Not all of the residue will go into solution at this point, but after Step #28 stir the warmed solution with the glass rod and the remainder of the residue should go into solution.

27. Add 1 ml distilled water and four drops of concentrated sulfuric acid.

28. Heat the solution on a steam bath for 3 minutes with occasional stirring.

29. Cool, add 20 ml distilled water, mix well by stirring and add concentrated ammonium hydroxide dropwise with constant stirring until alkaline to litmus paper. (This step must be done under a HOOD or an exhaust system. Also, make note that the color of the solution will turn yellow with the addition of NH_4OH, but will not remain yellow until you reach an endpoint which will remain a deep yellow color--at this point check with litmus paper and the solution should be alkaline.)

30. Transfer the solution to a 100 ml volumetric flask and wash the beaker about three times with small volumes of distilled water. Dilute to the mark and mix thoroughly. (If the sample contains solids, either filter some of the solution or let the solids settle out and use only the clear part of the solution for the rest of the analysis.)

31. Measure the absorbance of each sample at 420 nm using the blank solution as a zero. Dilute the sample and the blank with a suitable amount of distilled water if absorbance falls outside the range of calibration.

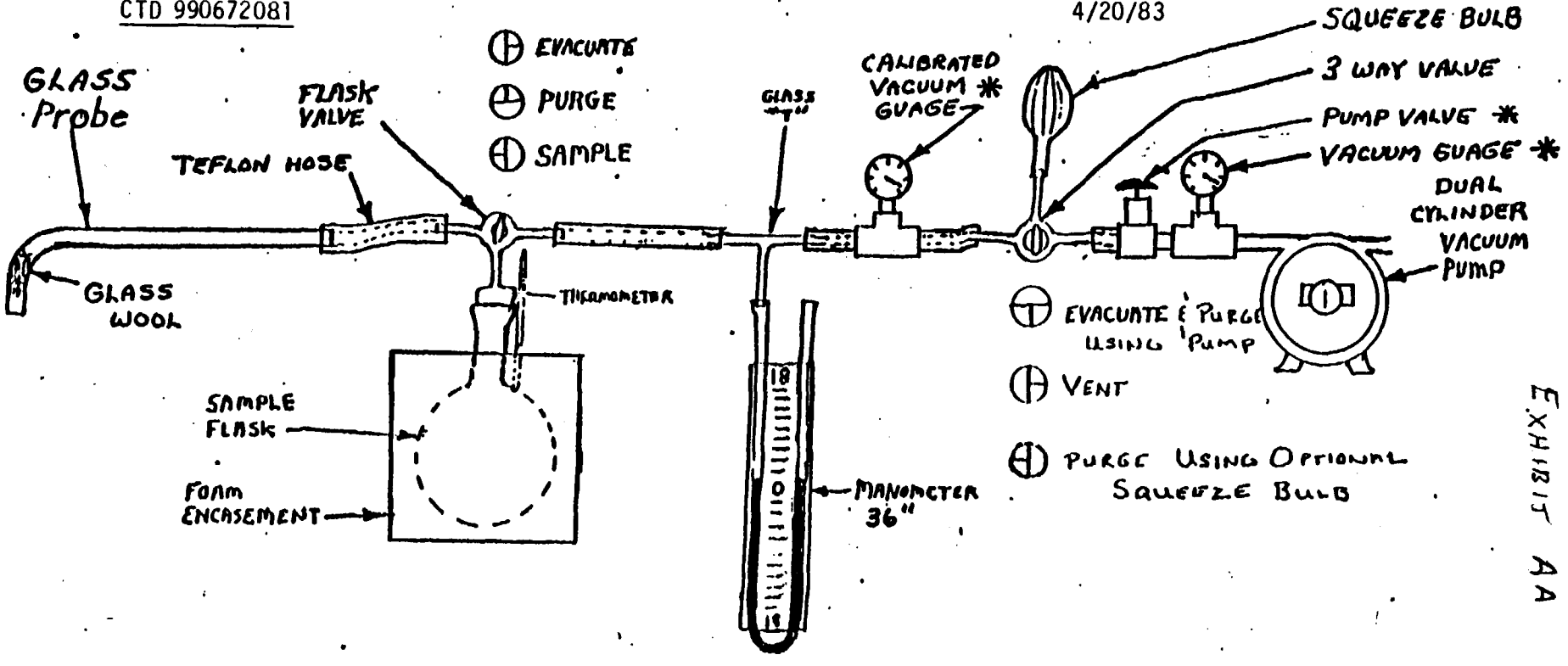
32. To calibrate spectrophotometer standards--add .0 - 16 ml of standard solution to a series of beakers. To each beaker add 25 ml of absorbing solution and add NaOH (in) dropwise until alkaline to litmus paper (35-40 drops). Follow the analysis procedure and draw a calibration curve using data collected. The curve should be concentration in mg NO_2 per sample versus absorbance.

THIS PROCEDURE IS EXACTLY AS PER METHOD 7
OF E.P.A. -- NO CHANGES ARE TO BE MADE.

LETTER	REVISION DESCRIPTION	ATE	BY
A	ADD PUMP VALVE & VACUUM GUAGE	9-75	WJM

RCRA Part B Permit Application
United Technologies
Pratt & Whitney Aircraft
CTD 990672081

4/20/83



* NOT REQUIRED BY EPA METHOD 7 BUT UTILIZED BY ROSENAGEL AND ASSOCIATES TEST TEAMS FOR REDUNDANCY

EXHIBIT AA p4

Form #RA-20-EPA-7

29

P.E. SEAL (If applicable)	Drawn	12/6/72	RMN
	Checked	12/6/72	[illegible]
	QC/R		
	Materials		
	Customer		
	SCALE: N/A	WT.	

NO_x SAMPLING TRAIN

ROSSNAGEL & ASSOCIATES
Engineering & Technical Consultants

JOB NO.	DWG. NO.	REV.
	A-0118	A
SHEET OF		

Signed _____

Code → 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

EXHIBIT BB p1

THE NEWLANDS SANITARY LABORATORY

A. RICHARD LOMBARDI, P.E. PRESIDENT
THOMAS D. LEE DIRECTOR
FREDERICK O. A. ALMQUIST, P.E. SANITARY ENGINEER
H. F. SACHS BACTERIOLOGIST
I. LAIRD NEWELL, P.E. CONSULTANT

HENRY SOUTHER LABORATORIES, PROPRIETOR
SANITARY, CHEMICAL AND BACTERIOLOGICAL INVESTIGATIONS
24 TOBEY ROAD
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TEL. (203) 242-6291

WATER SUPPLY AND PURIFICATION
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RCRA Part B Permit Application
United Technologies
Pratt & Whitney Aircraft
CTD 990672081

October 12, 1981

Minges Associates, Inc.
16 Avon Park North
Avon, Connecticut 06001

Attention: Mr. Lawton Averill

Gentlemen:

We have the following to report on the samples submitted to this laboratory on September 11, 1981.

Sample No.	710852-A	710852-B
Mark:	Wax - Solvent Mixture Reported 9-11-81	
	Solvent Supernatant	Wax
Nickel (Ni)	57.7 ppm	51.0 ppm
Iron (Fe)	--	654. ppm
Aluminum (Al)	--	166. ppm

Very truly yours,

THE NEWLANDS SANITARY LABORATORY

Thomas D Lee

Thomas D. Lee
Laboratory Director

RECEIVED
THE MINGES ASSOC. INC.
OCT 15 1981

TDL:D

EXHIBIT BB p 2

Minges Assoc., Inc. - 1 - Sept. 11, 1981
Page 161 of 162

Sample No. 710852 4/20/83
Mark: RCRA Part B Permit Application
United Technologies Sample of Wax-Solvent Mixture
Pratt & Whitney Aircraft
CTD 990672081

Polychlorinated Biphenyls	less than	10	ppb
Pesticides:			
Endrin	less than	10	ppb
Lindane	less than	10	ppb
Methoxychlor	less than	10	ppb
Toxaphene	less than	10	ppb
Herbicides (Chlorophenoxys):			
2,4-D	less than	10	ppb
2,4,5-TP Silvex	less than	10	ppb
Purgeable Organics:			
1,1,2,2 Tetrachloroethylene		57.8	ppm
1,1,1 Trichloroethane		16.0	ppm
Aromatics (1R)		None Detected	
Water (Fisher Titration)		96%	

Note: The above tests were performed on the supernatant portion of the sample. The supernatant represents 25% of the total volume of the sample.

THE NEWLANDS SANITARY LABORATORY
BLOOMFIELD, CT. 06002

EXHIBIT 88 P-3

A division of The Minges Associates, Inc.
11 Avon Park [illegible] on, CT 06001
[illegible] 203-677-8309

THE MINGES ENVIRONMENTAL LABORATORY

Lawton S. Averill, Laboratory Director
Catherine M. Pintavalle, Chemist
Tara L. Vander Els, Chemist

REPORT ON LABORATORY EXAMINATIONS

To Client: Pratt & Whitney Aircraft
Maintenance Bldg. - Mail Stop 122-12
East Hartford, CT 06108
Att: W. Chudzik

Date: November 15, 1983

SAMPLE DATA: Collected By: Pratt & Whitney Aircraft

SAMPLE NO.	DESCRIPTION OF SAMPLE
112-55-64	Sample labeled "Cyanide" and received October 7, 1983

LABORATORY FINDINGS: (milligrams per liter, mg/l, except as noted)

ANALYSIS FOR	SAMPLE NO. 112-55-64				
Cyanide Total	21,300				
Metals					
Aluminum	51				
Cadmium	6020				
Chromium, Total	4.3				
Copper	940				
Nickel	286				
Zinc	11				
Oil and Grease	48				

Lawton S. Averill
The Minges Environmental Laboratory

[illegible] Part B Permit Application
[illegible] Technologies
Pratt & Whitney Air[illegible]

THE NEWLANDS SANITARY LABORATORY
HENRY SOUTHER LABORATORIES, PROPRIETOR
SANITARY, CHEMICAL AND BACTERIOLOGICAL INVESTIGATIONS
24 TOBEY ROAD
BLOOMFIELD, CONNECTICUT 06002
TEL. (203) 242-6291

[illegible] 72081
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DIRECTOR
FREDERICK O. A. ALMQUIST, P.E.
SANITARY ENGINEER
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BACTERIOLOGIST
I. LAIRD NEWELL, P.E.
CONSULTANT

WATER SUPPLY AND PURIFICATION
SEWAGE & INDUSTRIAL WASTE DISPOSAL
DESIGN-SUPERVISION-VALUATION
CHEMICAL & BIOLOGICAL LABORATORIES
AIR POLLUTION STUDIES

December 19, 1983

Minges Associates, Inc.
16 Avon Park North
Avon, Conn. 06001

Attn: Mr.Lawton Averill

Gentlemen:

We have the following to report on the sample submitted to this laboratory on December 8,1983.

Sample No.	351L3
Mark	Liquid sample 2% Cyanide 112-55-64
PURGEABLE ORGANICS:	
Methylene Chloride	less than 100 ppb
1,1 Dichloroethylene	less than 100 ppb
1,1 Dichloroethane	less than 100 ppb
t-1,2 Dichloroethylene	less than 100 ppb
Chloroform	less than 100 ppb
1,2 Dichloroethane	less than 100 ppb
Bromodichloromethane	less than 100 ppb
1,1,1 Trichloroethane	less than 100 ppb
Carbon Tetrachloride	less than 100 ppb
1,1,2 Trichloroethylene	less than 100 ppb
Chlorodibromomethane	less than 100 ppb
Bromoform	less than 100 ppb
1,1,2,2 Tetrachloroethylene	less than 100 ppb

Very truly yours,
THE NEWLANDS SANITARY LABORATORY

Thomas D. Lee
Laboratory Director

TDL/cas

THE NEWLANDS SANITARY LABORATORY
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AIR POLLUTION STUDIES

December 19, 1983

Minges Associates, Inc.
16 Avon Park North
Avon, Conn. 06001

Attn: Mr. Lawton Averill

Gentlemen:

We have the following to report on the sample submitted to this laboratory on December 8, 1983.

Sample No.	351L3
Mark	Liquid sample 2% Cyanide 112-55-64
Total Organic Halides (TOX)	less than 10 ppb
Total Organic Carbon (TOC)	38.82 gms/Liter

Very truly yours,

THE NEWLANDS SANITARY LABORATORY

Thomas D. Lee

Thomas D. Lee
Laboratory Director

TDL/cas

[redacted] Part B Permit Application
United Technologies
Pratt & Whitney Aircraft
CTD 990672081

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December 19, 1983

Minges Associates, Inc.
16 Avon Park North
Avon, Conn. 06001

Attn: Mr. Lawton Averill

Gentlemen:

We have the following to report on the sample submitted to this laboratory on October 7, 1983.

Sample No.	387J3
Mark	Solid/liquid sample 112-55-62
Infrared	
Solid	parrafin wax
Liquid	Water 85% Perchloroethylene 15%
Total Organic Carbon	
Solid	64.8%
Liquid	2.21%

Visual Examination
This material is approximately 20% liquid and 80% solid.

Very truly yours,

THE NEWLANDS SANITARY LABORATORY

Thomas D. Lee

Thomas D. Lee
Laboratory Director

./cas

OPERATION MANUAL

INCINERATOR MONITORING SYSTEM

FOR

NEW WAY INDUSTRIES, INC.

CHARLTON TECHNOLOGY, INC.
P. O. BOX 26818
SAN DIEGO, CA 92126

1.0 DESCRIPTION OF THE SYSTEM

This manual describes an Incinerator Monitoring System designed for continuously monitoring carbon monoxide (CO) and oxygen (O_2). The system will provide a visual indication of CO and O_2 concentrations and adjustable alarms for indication of high CO concentration or low O_2 concentration. The system is housed in a weatherproof enclosure for outdoor installation.

1.1 CARBON MONOXIDE ANALYZER

CO is determined by an Infrared Industries Model 7100/7200 analyzer. This analyzer, employing a non-dispersive infrared analysis technique, provides a meter output with a range of 0 to 5%. Two alarm setpoints (LOW, HIGH) can be adjusted in the field to actuate at any concentration on a given range.

1.2 OXYGEN ANALYZER

O_2 is determined by a modified Jay Tec oxygen analyzer. This analyzer, employing a polarographic analysis technique, provides a range of 0 to 25% O_2. The alarm setpoint can be adjusted in the field to actuate at any concentration on the range.

1.3 ALARM SYSTEM

Simpson 3324 meter relays are provided for indicating the CO concentration and O_2 concentrations as well as high and low alarms for each parameter. Alarm levels can be adjusted in the field. DPDT relay contacts are available for both high and low alarms.

1.4 SAMPLING SYSTEM

Figure 1 shows the flow diagram for the sampling system. A Thomas Teflon-lined diaphragm-type sampling pump draws sample gas from the incinerator exhaust stack through a customer-provided probe and sample line. The sample passes through a filter/trap (T) where

particulates and any entrailed water droplets are removed. A portion of the sample gas is continually purged through the trap to the drain/vent. If condensate builds up in the trap it is automatically dumped to the drain/vent.

NOTE: This sampling system is designed for temperatures up to 300°F with moderate particulate loading and sample dewpoints essentially at ambient or lower. If particulate loading is heavy and if dewpoints significantly higher than ambient occur it may be necessary to employ a separate sample conditioning system (such as the Charlton Technology DRYSTAK Model SC-10) upstream of the monitoring system.

Sample gas passing through the trap passes through a 3-way valve (V-2) and then through flowmeters FI-1 and FI-2 to the analyzers. The valve is employed for periodic introduction of zero and span gas from customer-supplied calibration gas cylinders.

2.0 INSTALLATION OF THE SYSTEM

2.1 LOCATION OF THE SYSTEM

A Hoffman sheet metal enclosure (24" wide by 20" high by 16" deep) has been provided for outdoor installation of the carbon monoxide/oxygen monitoring system. Although the enclosure is weatherproof, several precautions should be taken in the selection of a location for the monitoring system. For the protection of the analyzers, the area should be free from excessive dust or humidity and should not be subjected to shock or vibration other than normal plant vibration. The system should be installed in a non-hazardous area. A shade or shield should be provided to protect the enclosure from direct sunlight or from any source of radiant heat.

2.2 MOUNTING OF SYSTEM ENCLOSURE

The enclosure should be wall-mounted with the hinge of the enclosure on the left side. The enclosure should be mounted high enough to provide convenient viewing of the analyzer meters and to permit servicing of the system. Sufficient clearance should be provided at the front of the enclosure to open the door. Sufficient clearance should be provided on the left-hand side of the enclsoure to permit pneumatic and electrical connections. It is recommended that the bottom of the enclosure be mounted at least 36" above the floor and that at least 30" of clearance be provided on the left-hand side, the front, and the right-hand side.

2.3 ELECTRICAL INTERCONNECTIONS

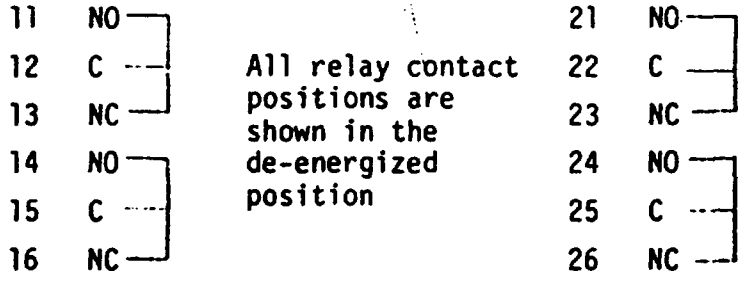
Two conduit hubs are provided on the left-hand side of the enclosure for making external electrical connections. The lower hub is for power connection to the system. The upper conduit hub provides access to the system for alarm wiring to the control room.

It is recommended that a junction box with main power switch be installed near the enclosure with a terminal board for making interconnections. It also may be desirable to provide alarm disable switches to permit the operator to conduct service on the monitoring system without actuating the alarms in the control room. Such a switch in the "disable" position would maintain the closed contact in the alarm circuit regardless of the position of the alarm contacts in the alarm relay.

Power connects to the system through the lower conduit hub. It is recommended that 16 gauge wire be used. The lower terminal board accepts the power as follows:

	TB 1
120 VAC HIGH	PIN 1
120 VAC LOW	PIN
Ground	Terminal Board holddown screw

The alarm interconnections to the control room are made through the upper conduit hub. The alarm wires connect directly to the back terminal boards on the meter relays. Both are identical and have the following pin locations:



The relays for HIGH alarm de-energize when the pointer goes above the setpoint. The relays for LOW alarm de-energize when the pointer goes below the setpoint.

2.4 SAMPLE INTERCONNECTIONS

Figure 1 shows the sample flow system for the incinerator monitoring system. Make sample interconnections at the four stainless steel fittings located at the left-hand side of the enclosure:

SAMPLE VENT	Connect to vent with no backpressure
SAMPLE IN	Connect 1/4" sample line with Gyrolok flareless tube fitting (provided). Use Teflon or 316 stainless steel tubing. Plastic tubing can be used provided it can withstand system temperatures and is inert to components of the sample.
DRAIN/VENT	Should be connected to a vented drain since both liquid condensate and sample bypass will flow from this fitting.
CAL	Connect calibration gas (zero gas and span gas) at this fitting as required for periodic calibration.

3.0 INITIAL START UP OF THE SYSTEM

3.1 TEMPERATURE CONTROL SYSTEM

For best performance, both of the analyzers should be protected from extreme temperature changes. Infrared Industries recommends operation of the analyzer at temperatures from 0°C to 50°C (122°F) and states that operating the analyzer at 60°C (140°F) for extended periods of time may shorten component life and will increase the drift by a factor of three.

The CO/O_2 system is provided with a temperature-controlled electric heater. In cold weather the system can readily be kept within the operating range of the analyzers. The enclosure is not air-conditioned, however, and during hot weather the system relies upon the heater fan to maintain circulation and to dissipate heat through louvers in the side of the enclosure. During extremely hot weather there may be times when the temperature of the enclosure may exceed the recommended high temperature of 45°C.

Start up the temperature control system as follows:

1. Turn the fan switch (push button on upper panel) to the ON position. This will start the fan which draws in ambient air through the left-hand louver and exhausts through the right-hand louver. The fan also circulates air within the enclosure.

   For cold-weather operation (expected ambients below 40°F) actuate the heating circuit as follows:

2. Depress the "750" pushbutton on the heater case to actuate the 750 watt heating circuit.

3. After selecting the desired control temperature, place your hand over the outlet of the heater and turn the thermostat control knob (located on the left wall just in front of the heater) in a clockwise direction until hot air comes out of the outlet. Estimate the proper thermostat setting, then close the door of the enclosure and observe the thermometer on the front panel. Readjust as required until the control temperature is within the desired range.

3.2 SAMPLING SYSTEM

After all sample interconnections have been made, start up the sampling system as follows:

1. Place the CAL/SAMPLE switch in the SAMPLE position.
2. Turn on the sample pump.
3. Adjust the flow rates to the CO analyzer and the O_2 analyzer to 2 liters per minute.

NOTE: The sampling system is now in operation. Sample gas is flowing both to the vent and to the drain/vent. There is always a flow of sample to the drain/vent even when the valve is in the CAL position. This continually flushes entrained water to the drain.

3.3 INFRARED INDUSTRIES MODEL 7100/7200 CO ANALYZER

After reviewing the IRI instruction manual, turn the power switch on the front panel of the analyzer to the ON (up) position. The meter needle will swing toward the (+) direction, deflect toward the (-) direction, and then gradually return to 0. Let the analyzer warm up at least 30 minutes at operating temperature, then proceed to Section 4.0 of this manual for calibration.

3.4 JAYTEC O_2 ANALYZER

Turn the power switch on the front panel of the analyzer to the ON position. The meter will deflect toward the (+) direction before returning to the proper concentration reading. Let the analyzer warm up at least 30 minutes then proceed to Section 4.0 of this manual for calibration.

3.5 SIMPSON MODEL 3324 METER RELAYS

Each Simpson meter has adjustable alarm setpoints for low and high alarms. Set the alarm pointers for each parameter to the desired low end or high alarm concentration.

4.0 CALIBRATION OF THE SYSTEM

Customer-supplied calibration gas cylinders will be required for calibration of the incinerator monitoring system. Certified gas mixtures containing known concentrations of O_2 and CO are available from local suppliers (e.g. Airco, Matheson).

The primary purpose of the incinerator monitoring system, however, is to monitor the combustion performance. Therefore, extreme accuracy of calibration will not be required. For this reason we recommend a relatively simple calibration scheme which will require only one standard gas concentration and a supply of instrument air.

GAS	FUNCTION
CO in Nitrogen	Span Gas for CO Analyzer
	Zero Gas for Oxygen Analyzer
Instrument Air	Span Gas for CO Analyzer
	Span Gas for Oxygen Analyzer

4.1 CALIBRATION OF THE CARBON MONOXIDE ANALYZER

Detailed calibration instructions are included in the Infrared Industries operating manual. For preliminary calibration of the analyzer, however, proceed as follows:

1. Turn on the analyzer and allow to warm up for at least 30 minutes (see Section 3.3).
2. Turn SAMPLE/CAL toggle switch to the CAL position.
3. Introduce zero gas (instrument air) into the analyzer for a period of five minutes or more. Adjust CO flowmeter on lower panel to 2.0 liters per minute.
4. Adjust ZERO control for the CO monitor so that the meter reads zero.

5. Place the CHECK switch to the CHECK position and adjust the CAL knob to obtain a full scale deflection.

6. Connect the instrument air, turn off the CHECK switch, and introduce span gas (a known concentration of CO in nitrogen) into the analyzer for a period of five minutes or more. Adjust the span knob to the known concentration.

4.2 CALIBRATION OF THE OXYGEN ANALYZER

The Jaytec oxygen analyzer is essentially linear in response and a single-point calibration is sufficient to calibrate. Air is the most convenient "span gas" for the oxygen analyzer. A zero adjust is now provided with this analyzer since the technique used has an "absolute" zero. The span can be adjusted as follows.

1. Allow the analyzer to warm up for at least 30 minutes (see Section 3.4).

2. Switch the SAMPLE/CAL toggle switch to the CAL position.

3. Introduce span gas (instrument air) into the analyzer for a period of five minutes or more.

4. Adjust the SPAN control on the front panel to provide a meter reading of 21% oxygen.

5. Remove the instrument air from the system and switch the valve back to the SAMPLE position.

5.0 ROUTINE OPERATION

The system has been designed for unattended operation. Customer experience with the system will aid in establishing routine operating procedures. During the first days of operation, however, we recommend that customer personnel perform the following.

1. Observe the meter readings of the analyzers frequently and record in a log book.
2. Check zero and span of both analyzers daily.
3. Note temperature range inside the enclosure and readjust thermostat as required.
4. Observe general operation of the system and record irregularities in log book.
5. Make periodic checks of the alarms and adjust setpoints as required.

6.0 SERVICE AND MAINTENANCE

The sampling system should require a minimum of service and maintenance other than periodic cleaning of lines and components.

Recommended service:

Operation	Frequency
Clean check valve in pump head. Remove pump head (4 screws) and clean stainless steel flapper valve.	As required
Clean heater fan; remove louver and screen on left-hand side of case. Clean fan as required.	6 months

RPT 101 09/26/83 INDUSTRIAL WASTE WEEKLY INVENT ORAGE-EAST HARTFORD 459509-01 PA

STORAGE LOCATION: 16 HWB AREA 81 - OIL SLUDGE CATEGORY NUMBER: 01 WAX/SOLVENT

PHA MANIFEST	GENER DEPT	GENER DATE	TYPE OF WASTE CONTAINER	STORAGE QTY	STORAGE WEIGHT	RECEIVED DATE/SHIFT	TREAT QTY	TREAT OR SHIP WT	ITEM IDENT	MATERIAL NUMBER	GENERIC NAME
132373	45624	102782	55 G SLUDGE LANDFILL	2	800	111082			3002		WAX/CHLORINATED SOLVENTS (SOLID)
141521	45630	032383	BARREL 55 G	3	740	060883			3002		WAX/CHLORINATED SOLVENTS (SOLID)
			### TOTALS ###		1540						

RCRA Part B Permit Application
United Technologies
Pratt & Whitney Aircraft
CTD 990672081

EX 14.10.17 DD

Page New: 161B of 162
11/30/83

US EPA New England
RCRA Document Management System
Image Target Sheet

RDMS Document ID # 2451

Facility Name: PRATT & WHITNEY - MAIN STREET

Facility ID#: CTD990672081

Phase Classification: R-1B

Purpose of Target Sheet:

[X] Oversized (in Site File) **[ ] Oversized (in Map Drawer)**

[ ] Page(s) Missing (Please Specify Below)

[ ] Privileged **[ ] Other (Provide Purpose Below)**

Description of Oversized Material, if applicable:

EXHIBIT EE: DRAWING PE-MC-682-E: C\VTP LAYOUT, PIPING SCHEMATIC

[ ] Map **[ ] Photograph** **[X] Other (Specify Below)**

FLOW CHART

*** Please Contact the EPA New England RCRA Records Center to View This Document ***

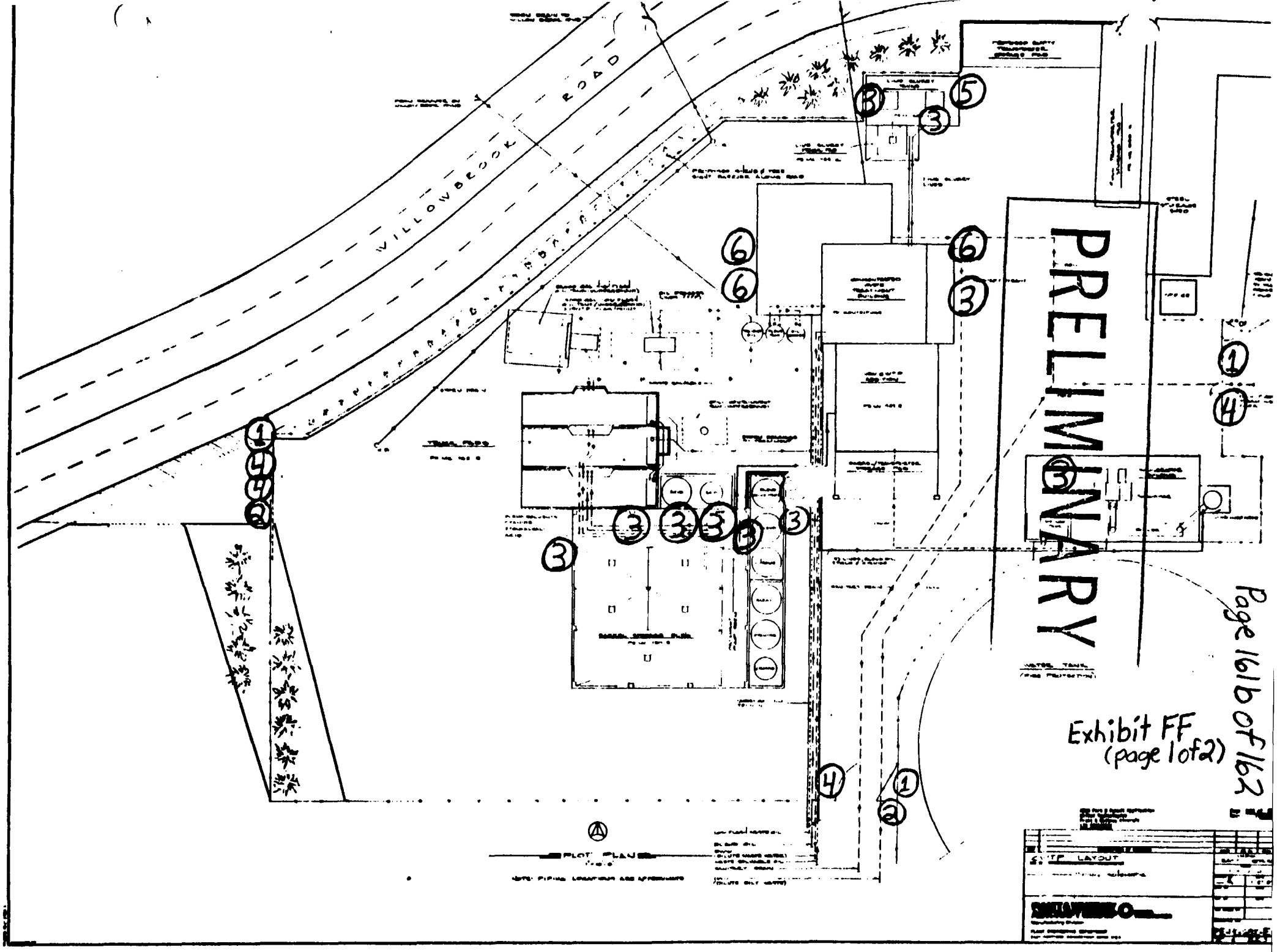


Exhibit FF
(page 1 of 2)

PRELIMINARY

EXHIBIT FF (cont'd)

WORDING ON WARNING SIGNS

1

NOTICE
Authorized Personnel Only
Entry May be Dangerous

2

CAUTION
Entering Chemical
Treatment Area

3

CAUTION
No Smoking

4

EYE PROTECTION
Must Be Worn in this Area

5

DANGER
Unauthorized Personnel
Keep Out

6

NOTICE
Authorized Personnel Only